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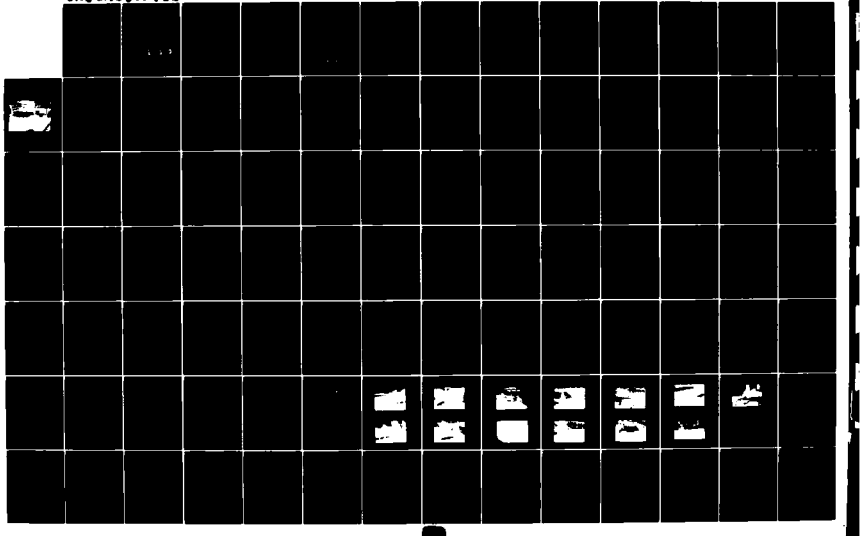

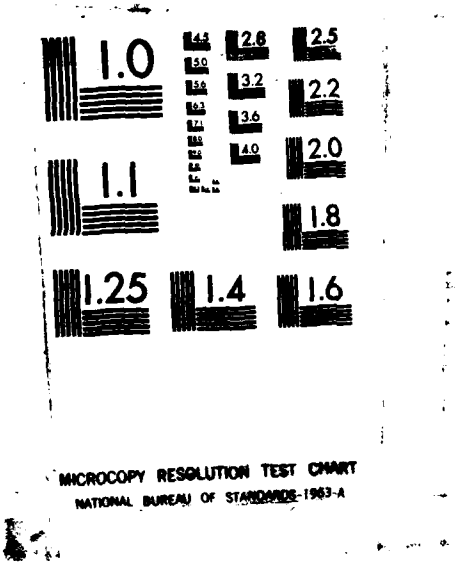
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WEYMOUTH RIVER BASIN
WEYMOUTH, MASSACHUSETTS

WHITMANS POND DAM

MA 00775

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

DTIC ELECTE JUN 24 1985 S D G

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS. 02154

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4. TITLE (and Subtitle) Whitmans Pond Dam NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS		5. TYPE OF REPORT & PERIOD COVERED INSPECTION REPORT 6. PERFORMING ORG. REPORT NUMBER
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18. SUPPLEMENTARY NOTES

Cover program reads: Phase I Inspection Report, National Dam Inspection Program; however, the official title of the program is: National Program for Inspection of Non-Federal Dams; use cover date for date of report.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

DAMS, INSPECTION, DAM SAFETY,
Weymouth River Basin
Weymouth, Massachusetts
Herring Brook

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The dam is about 60 ft. long between abutments and the maximum height if the dam is about 16 ft. The pond is utilized as a recreational facility. The dam and appurtennant works are judged to be in good physical condition, however, because the spillway can only pass 62 percent of the routed test flood outflow, the dam was given an overall rating of fair. The owner should implement various operating and maintenance measures.

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DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OF:

NEDED

DEC 9 1980

Honorable Edward J. King
Governor of the Commonwealth of
Massachusetts
State House
Boston, Massachusetts 02133

Dear Governor King:

Inclosed is a copy of the Whitmans Pond Dam (MA-00775) Phase I Inspection Report, which was prepared under the National Program for Inspection of Non-Federal Dams. This report is presented for your use and is based upon a visual inspection, a review of the past performance and a brief hydrological study of the dam. A brief assessment is included at the beginning of the report. I have approved the report and support the findings and recommendations described in Section 7 and ask that you keep me informed of the actions taken to implement them. This follow-up action is a vitally important part of this program.

A copy of this report has been forwarded to the Department of Environmental Quality Engineering, the cooperating agency for the Commonwealth of Massachusetts. In addition, a copy of the report has also been furnished the owner, Town of Weymouth, Mass.

Copies of this report will be made available to the public, upon request, by this office under the Freedom of Information Act. In the case of this report the release date will be thirty days from the date of this letter.

I wish to take this opportunity to thank you and the Department of Environmental Quality Engineering for your cooperation in carrying out this program.

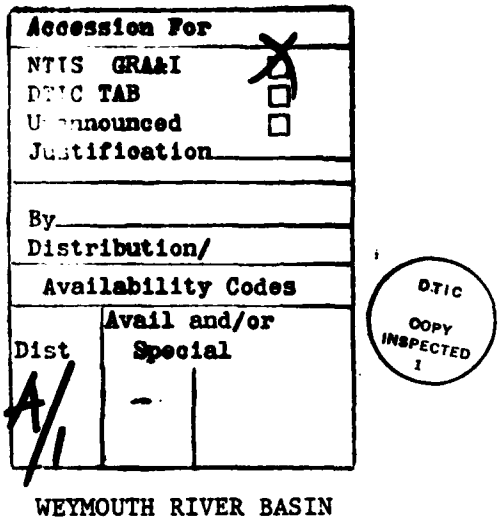
Sincerely,

WILLIAM E. HODGSON, JR.
Colonel, Corps of Engineers
Acting Division Engineer

Incl
As stated

WHITMANS POND DAM

MA 00775



WEYMOUTH RIVER BASIN
WEYMOUTH, MASSACHUSETTS

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

NATIONAL DAM INSPECTION PROGRAM
PHASE I INSPECTION REPORT

Identification No:	MA 00775
Name of Dam:	Whitmans Pond Dam
Town:	Weymouth
County and State:	Norfolk County, Massachusetts
Stream:	Herring Brook
Date of Inspection:	18 April 1980

BRIEF ASSESSMENT

Whitmans Pond Dam is a concrete gravity structure consisting of three basic components: a fish ladder at the left abutment; a 24 ft. long ogee shaped overflow section located just to the right of the fish ladder; and a siphon spillway structure located just right of the overflow section and extending to the right abutment. The siphon spillway structure contains four siphon units having throats measuring 6 ft. by 5 ft. There is a 2.5 ft. square gated sluiceway located on the right side and in the lower part of the overflow section. The dam is about 60 ft. long between abutments and the maximum height of the dam is about 16 ft. measured from downstream river channel bottom to the top of the siphon structure. The crest of the overflow section is 5.8 ft. below the top of dam. The dam was constructed in 1970 as part of a flood control project for the Town of Weymouth, Massachusetts.

Whitmans Pond is utilized as a recreational facility. It is about 7,000 ft. long and has a surface area of about 191 acres at spillway crest level. The drainage area is 12.11 sq. mi. (7,750 acres) and the maximum storage to top of dam is 2,000 acre-ft.;the size classification is thus intermediate. Because a failure of the structure would cause serious damage to the downstream community East Weymouth, with the possibility of the loss of more than a few lives and the probability of excessive economic losses, it has been classified as having a high hazard potential.

Based on the guidelines, the recommended test flood for such a facility is a full Probable Maximum Flood. The test flood inflow was calculated to be 6,850 cfs. The routed test flood outflow of 5,100 cfs overtops the dam by 2.7 ft. The spillways can pass 3,150 cfs or about 62 percent of the routed test flood outflow without overtopping the dam.

The dam and appurtenant works are judged to be in good physical condition, however, because the spillway can only pass 62 percent of the routed test flood outflow, the dam was given an overall rating of fair. The only problem with the physical condition of the dam is the erosion downstream of each abutment.

Within one year after receipt of this Phase I Inspection Report the owner should engage a qualified registered engineer to: (1) perform a detailed

hydraulic and hydrologic study to further assess the need for and means to increase the project discharge capacity; and, (2) perform a seismic investigation and analysis by conventional equivalent static load methods.

The owner should implement the following operating and maintenance measures: (1) repair erosion of the left abutment at the downstream end of the left training wall of the fish ladder with compacted gravel fill and locally place riprap in the vicinity of the downstream side of the end of the retaining wall; (2) repair the slope behind the right retaining wall on the right abutment with suitable compacted backfill; (3) develop a formal surveillance and downstream emergency warning plan, including round-the-clock monitoring during periods of heavy precipitation; (4) institute procedures for a biennial technical inspection of the dam and its appurtenant structures; and (5) implement a regular periodic maintenance program.

Peter B. Dyson
Project Manager

This Phase I Inspection Report on Whitmans Pond Dam (MA-00775) has been reviewed by the undersigned Review Board members. In our opinion, the reported findings, conclusions, and recommendations are consistent with the Recommended Guidelines for Safety Inspection of Dams, and with good engineering judgment and practice, and is hereby submitted for approval.

ARAMAST MAHTESIAN, MEMBER
Geotechnical Engineering Branch
Engineering Division

CARNEY M. TERZIAN, MEMBER
Design Branch
Engineering Division

RICHARD DIBUONO, CHAIRMAN
Water Control Branch
Engineering Division

APPROVAL RECOMMENDED:

JOE B. FRIAR
Chief, Engineering Division

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test Flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

The Phase I Investigation does <u>not</u> include an assessment of the need for fences, gates, no-trespassing signs, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety to the public. An evaluation of the project for compliance with OSHA rules and regulations is also excluded.

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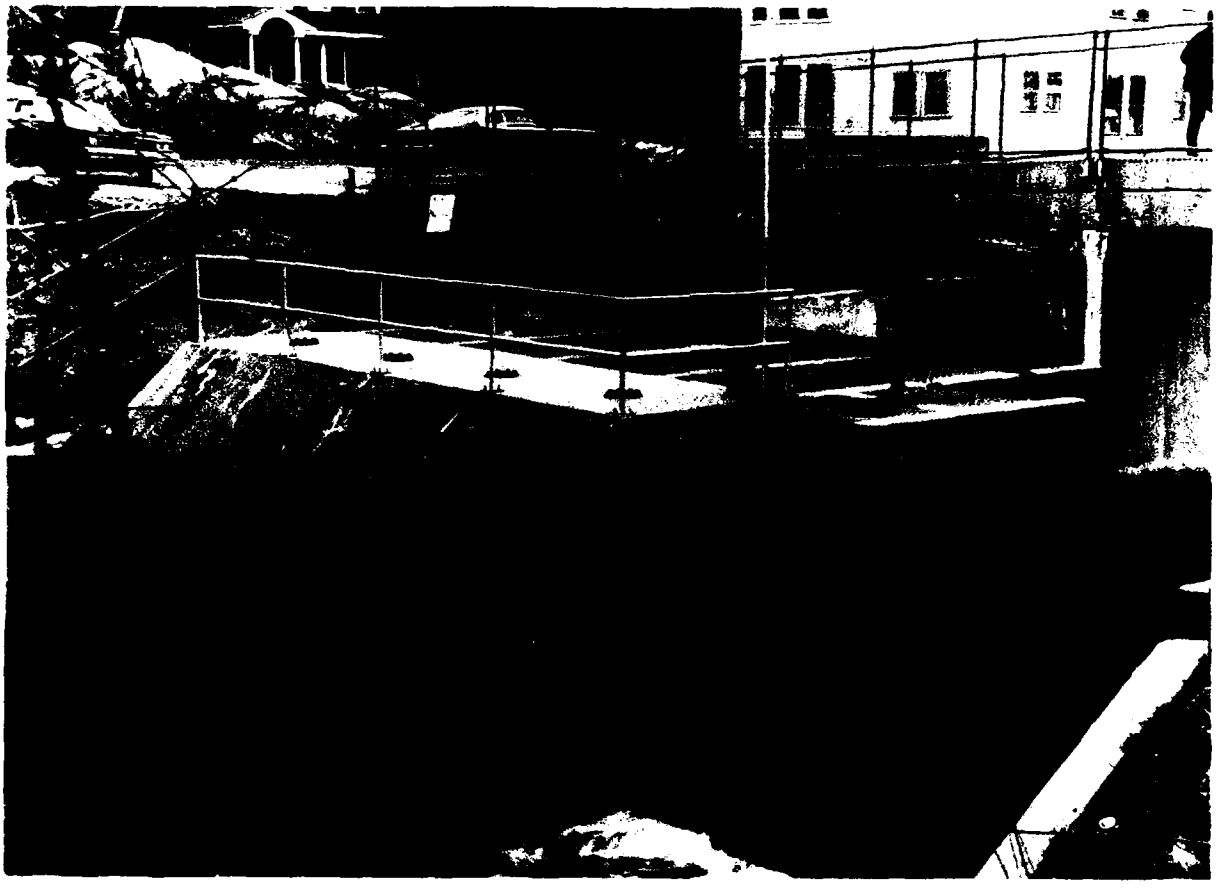
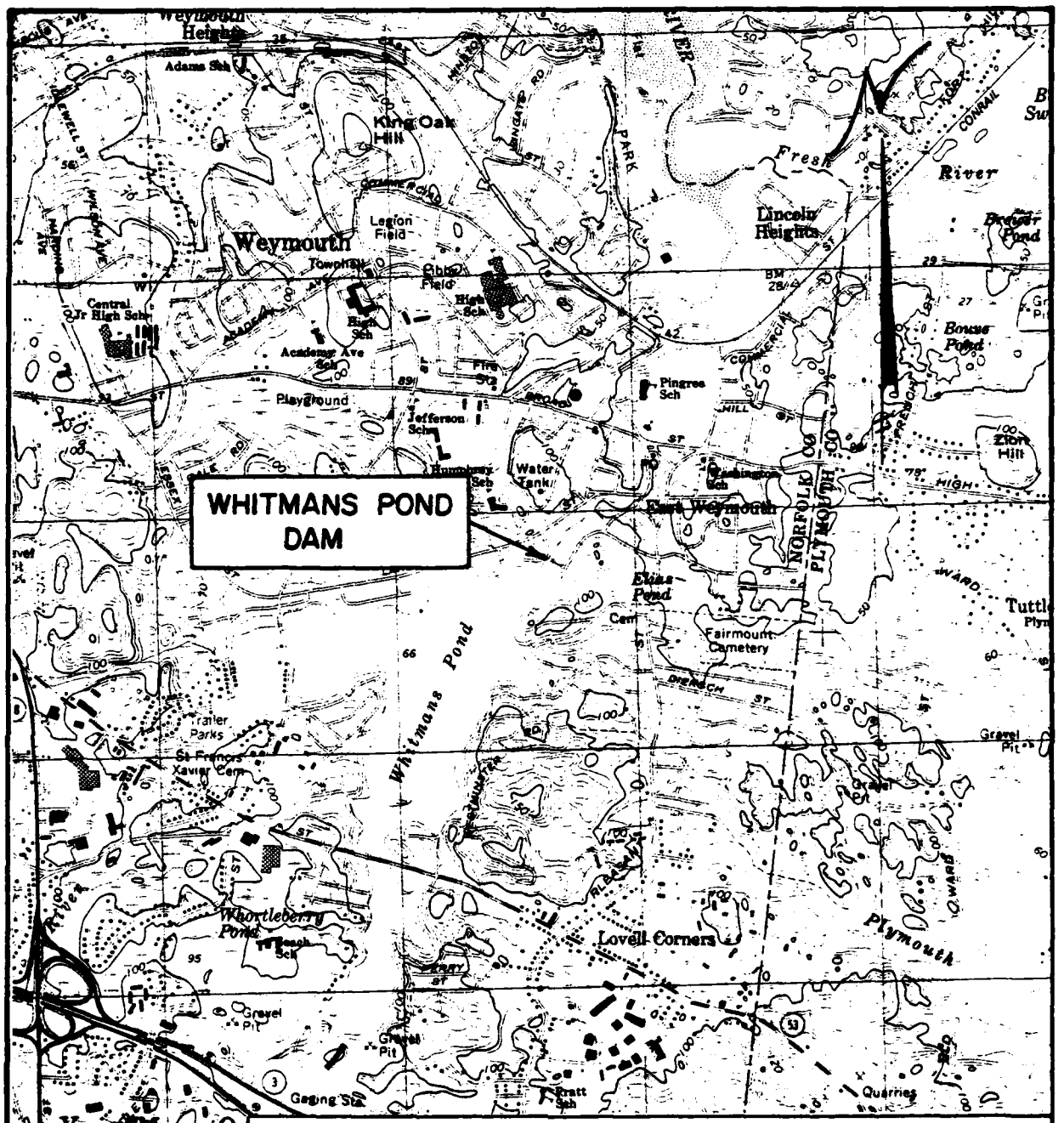
WHITMANS POND DAM



OVERVIEW FROM LEFT ABUTMENT



LOUIS BERGER & ASSOC., INC WELLESLEY, MASS. ARCHITECT · ENGINEER	U.S. ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.

NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS

WHITMANS POND DAM

WEYMOUTH QUADRANGLE

STATE - MA

			SCALE 1:25000
			DATE

PHASE I INSPECTION REPORT

WHITMANS POND DAM MA 00755

SECTION 1 - PROJECT INFORMATION

1.1 General

a. Authority. Public Law 92-367, August 8, 1972, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a national program of dam inspection throughout the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region. Louis Berger & Associates, Inc. has been retained by the New England Division to inspect and report on selected dams in the State of Massachusetts. Authorization and notice to proceed was issued to Louis Berger & Associates, Inc. under a letter of 28 March 1980 from William E. Hodgson, Jr., Colonel, Corps of Engineers. Contract No. DACW33-80-C-0043, has been assigned by the Corps of Engineers for this work.

b. Purpose of Inspection.

(1) Perform technical inspection and evaluation of non-Federal dams to identify conditions which threaten the public safety and thus permit correction in a timely manner by non-Federal interests.

(2) Encourage and assist the States to initiate quickly effective dam safety programs for non-Federal interests.

(3) Update, verify and complete the National Inventory of Dams.

1.2 Description of Project

a. Location. Whitmans Pond Dam is located in Norfolk County in the Town of Weymouth in eastern Massachusetts. The dam is situated about 850 ft. upstream of Iron Hill Dam and the headwaters of Herring Brook and about 1.3 mi. upstream of the confluence of Herring Brook and the Weymouth Back River. The dam can be reached via a side Street off Lake Street or via Iron Hill Street. The dam is shown on U.S.G.S. Quadrangle, Weymouth, Massachusetts with coordinates approximately at N 42° 12 ' 39", W 70° 55' 49".

b. Description of Dam and Appurtenances. The Whitmans Pond Dam is a 60 ft. long and 16 ft. high concrete gravity dam consisting of three major elements; a fish ladder, an overflow section, and a siphon spillway structure containing four siphon units. A pedestrian bridge spans the approach channel just upstream of the spillway structures.

At the left side of the dam there is a concrete fish ladder with a clear opening of 3 ft. and a length of approximately 75 ft. The ladder consists basically of two reinforced concrete training walls founded on bedrock. There are slots in the concrete walls to accomodate wooden baffles set at approximately two foot intervals. The elevation of the base slab between the walls varies from 56.9 at the downstream end to 64.6 at the upstream end. The top of the retaining walls are at elevation 72.4.

Just to the right of the fish ladder is a concrete ogee overflow section which has an overall width of 25 ft. and net width of 24 ft. The crest of the overflow section is at elevation 66.6. The training walls on either side of the spillway are 5.8 ft. high. On the right side of the overflow section, at the channel bottom is a sluiceway through the base of the ogee section. The sluiceway is 2.5 ft. square and has an invert elevation of 58.6 ft. The control for the sluiceway is a 2.5. ft. square sluice gate which is hand operated from a small bridge over the right side of the overflow section.

To the right of the overflow section is the siphon spillway structure which extends to the right abutment of the dam. This structure is 29 ft. wide and has four siphon units. Each unit is 6 ft. wide by 5 ft. high at its throat. The interior crest elevations are 66.8 for unit one, 66.6 for unit two, 66.7 for unit three, and 66.9 for unit four as shown in the design drawings in Appendix B. The top of the siphon spillway structure is at elevation 72.4. Both the siphon spillway structure and the ogee spillway section are founded on bedrock.

There is an 80 ft. long reinforced concrete girder foot bridge spanning the dam structure immediately upstream of the crest of the spillway. The bridge is supported on each end by reinforced concrete abutments and by a central pier of reinforced concrete founded on bedrock in the stream channel upstream of the dam. The bridge deck varies from elevation 80 on the left abutment to elevation 77.5 on the right abutment.

c. Size Classification. Whitmans Pond Dam has a hydraulic height of about 16 ft. above downstream river level, and impounds a normal storage of about 550 acre-ft. to spillway crest level and a maximum of about 2,000 acre-ft. to top of dam. In accordance with the size and capacity criteria given in Recommended Guidelines for Safety Inspection of Dams, the project falls into the intermediate category on the basis of capacity and is therefore classified accordingly.

D. Hazard Classification. A breach failure of Whitmans Pond Dam would release water into Iron Hill Reservoir, down Herring Brook and through the heavily built-up community of East Weymouth to the Weymouth Back River. It is estimated that a breach of the dam's abutment area would flood a school building, four industrial buildings, about twenty-three commercial buildings and about seven houses to depths ranging from 1 to 7 ft., all within a distance of about 4,000 ft. from the dam. In addition several local streets would be flooded. No significant flooding is estimated due to the spillway discharge alone. In accordance with the Recommended Guidelines for Safety Inspection of Dams, Whitmans Pond Dam has therefore been classified as having a high hazard potential, since failure may cause damage to more than a small number of habitable structures and excessive economic losses, with the potential for the loss of more than a few lives.

e. Ownership. Whitmans Pond Dam is owned by the Town of Weymouth, Massachusetts.

f. Operator. The operator of the dam is Mr. Frank Lagrotteria, Town Engineer, Town of Weymouth, Department of Public Works, 120 Winter Street, Weymouth, Massachusetts 02188. Telephone: 617-337-5100.

g. Purpose of Dam. Whitmans Pond Dam impounds a body of water used for recreational purposes. The dam together with the Iron Hill Dam and the Herring Brook Flood Control Conduit serves to provide flood control protection to the Town of Weymouth.

h. Design and Construction History. The Whitmans Pond Dam was designed by Metcalf and Eddy, Engineers, Boston, Massachusetts and was constructed in 1970. It replaced a concrete structure which was built in 1935, a few feet downstream from the site at which another dam had been located for more than 120 years. The present dam was constructed together with the Iron Hill Dam and the Herring Brook Flood Control Conduit as a means of reducing flood damage in the Town of Weymouth.

i. Normal Operating Procedures. There are no written operating procedures for the facility. The only operating devices are the controls for the low level sluice way, stoplogs in the upstream entrance to the fish ladder, and emergency air vents for each of the siphon units. These air vents consist of cast-iron pipes which are normally sealed with a bolted, gasketed, blind flange cover and are used for venting the siphons should the automatic air vents for the siphons not function.

1.3 Pertinent Data.

a. Drainage Area. The drainage area contributing to Whitmans Pond is located at the beginning of Herring Brook. The drainage area encompasses a total of about 12.11 sq. mi., (7,750 acres), of which about 191 acres is occupied by the pond. The longest circuitous stream course leading to the dam is about 6.6 miles long with an elevation difference of about 104 ft., or at a slope of about 15.7 ft. per mile. The drainage area has a length of about 6 miles and an average width of about 2.8 miles. The topography in the basin is best described as flat and coastal. The drainage basin consists of a mixture of forested areas and heavily builtup urban areas. Weymouth Great Pond having a drainage area of about 2.89 sq. mi. is located in the upper reaches of the drainage area and should have a substantial effect on the inflow to Whitmans Pond.

b. Discharge at Damsite.

(1) Outlet Works Conduit. There is a 2.5 ft. square sluice gate located in the overflow section and to the left of the siphon spillway section of the dam. The bottom of the sluice gate is near the channel bottom and this facility could be used for lowering the pond. With the water surface level at top of dam, elevation 72.4 ft. it is estimated that the sluice gate would be capable of discharging about 95 cfs.

(2) Maximum Known Flood at Damsite. No records are available of flood flows into Whitmans Pond or of spillway releases and surcharge heads, since the existing dam was constructed. However, in the Preliminary Engineering Study for the dam, it was estimated that the maximum discharge over the previous dam at Whitmans Pond was 1,100 cfs during hurricane "Diana" in August of 1955. It was estimated that the surcharge during that storm peaked at elevation 71.5 ft.

(3) Ungated Spillway Capacity at Top of Dam. The ungated spillway capacity at top of dam, elevation 72.4, is 3,150 cfs.

(4) Ungated Spillway Capacity at Test Flood Elevation. The ungated spillway capacity at test flood elevation 75.1 ft. is about 4,550 cfs.

(5) Gated Spillway Capacity at Normal Pool. Not Applicable

(6) Gated Spillway Capacity at Test Flood Elevation. Not Applicable

(7) Total Spillway Capacity at Test Flood Elevation. The total spillway capacity at test flood elevation is the same as (4) above, 4,550 cfs at elevation 75.1.

(8) Total Project Discharge at Top of Dam. Assuming the sluice gate to be open, the total project discharge at top of dam, elevation 72.4 is about 3,245 cfs.

(9) Total Project Discharge at Test Flood Elevation. The total project discharge at test flood elevation is 5,100 cfs at elevation 75.1.

c. Elevation (ft. N.G.V.D.)

(1) Streambed at toe of dam - 56.4 ±

(2) Bottom of cutoff - 54.0

(3) Maximum tailwater - unknown

(4) Recreation pool - 66.6

(5) Full flood control pool - Top of dam - 72.4

(6) Spillway crest - 66.6

(7) Design surcharge (Original Design) - 70.6 (Approximate)

(8) Top of dam - 72.4

(9) Test flood surcharge - 75.1

d. Reservoir (Length in feet)

(1) Normal pool - 7,000

(2) Flood control pool - 8,000

(3) Spillway crest pool - 7,000

(4) Top of dam - 8,000

(5) Test flood pool - 8,300

e. Storage (acre-feet)

(1) Normal pool -550

(2) Flood control pool - 2,000

(3) Spillway crest pool - 550

(4) Top of dam - 2,000

(5) Test flood pool - 2,925

f. Reservoir Surface (acres)

(1) Normal pool - 191

(2) Flood-control pool - 306

(3) Spillway crest - 191

(4) Top of dam - 306

(5) Test flood pool - 362

g. Dam

(1) Type - Mass Concrete, Gravity

(2) Length - 60 ft.

(3) Height - 16 ft.

(4) Top Width - Varies - about 19 ft. at siphon section

(5) Side Slopes - Vertical sides at siphon structure

(6) Zoning - Not Applicable

(7) Impervious Core - Not Applicable

(8) Cutoff - Concrete keys in ledge

(9) Grout curtain - Unknown

i. Spillway

(1) Type - Combination: Concrete ogee overflow section, fish ladder and, four unit siphon spillway section

(2) Length of Weir - Ogee Section: 24 ft.
Fish Ladder : 3 ft.
Siphons: Four with 6 ft. x 5 ft. throats each

(3) Crest Elevation - Ogee Section: 66.6
Siphons: four at elevations 66.6, 66.7, 66.8 and 66.9

(4) Gates - None

(5) U/S Channel - Natural channel with concrete walls in immediate vicinity of dam.

(6) D/S Channel - Natural channel impounded by Iron Hill Dam located about 850 ft. downstream.

(7) General - None

j. Regulating Outlets

(1) Invert - 58.6

(2) Size - 2.5 ft. x 2.5 ft.

(3) Description - Sluiceway opening through overflow section.

(4) Control Mechanism - Hand Operated Sluice Gate.

(5) Other - None

SECTION 2 - ENGINEERING DATA

2.1 Design Data

The present Whitmans Pond Dam replaced an earlier dam located in the same vicinity as the present dam. The present dam was designed by Metcalf & Eddy, Engineers (now Metcalf & Eddy, Inc.) of Boston, Massachusetts. Copies of drawings which are pertinent to consideration of dam safety are included in Appendix B. Hydrologic, hydraulic, and soils data relating to the design of the dam was located in the Town Engineer's Office in Weymouth, Massachusetts, and has been reviewed by the inspection team.

2.2 Construction Data

The dam was built in 1970 as part of the Flood Control Conduit and Siphon Spillways, Herring Brook Project by the Commonwealth of Massachusetts, Department of Public Works, Division of Waterways, but no construction records have been recovered.

2.3 Operation Data

No engineering operational data was disclosed for the dam.

2.4 Evaluation

a. Availability. The plans, hydrologic data, hydaulic data and borings logs located in the Town Engineer's Office supplemented by the visual observations of the inspection team, form the basis for the information presented in this report.

b. Adequacy. Sufficient engineering data was recovered to assess the structural stability of the concrete dam. No data was available to assess the safety of the earth abutment zones. The overall adequacy of the dam was assessed on the basis of the data recovered supplemented by visual inspection, past perfromance history and engineering judgement.

c. Validity. The validity of the engineering data acquired covering the dam is considered acceptable and is not challenged.

SECTION 3 - VISUAL INSPECTION

3.1 Findings

a. General. The visual inspection of Whitmans Pond Dam took place on 18 April 1980. On that date water was flowing over the ogee crest spillway, through the fish ladder and through at least two of the four siphon units. However, the rate of flow over the dam was relatively low. There was no evidence of any major problems with the dam. The physical condition of the dam was judged to be good.

b. Dam and Appurtenant Structures. Whitmans Pond Dam is a concrete gravity structure consisting of three basic components: a fish ladder on the left abutment; an ogee shaped overflow section located just tothe right of the fish ladder; and a siphon spillway structure containing four siphon units. The dam has a maximum height of 16 ft. from channel bottom to the top of the siphon structure and the distance from the left abutment to the right abutment is about 60 ft. The fish ladder has a clear opening of 3 ft. and is about 75 ft. long. The ogee shaped overflow section has a total crest length of 25 ft. with a clear opening length of 24 ft. The crest of the overflow section is 5.8 ft. below the top of the dam. On the right side of the overflow section, at channel bottom is a sluiceway which is controled by a 2.5 ft. square sluice gate. The control mechanism for the sluice gate is hand operated from a small bridge which spans part of the overflow section. The siphon spillway structure located to the right of the overflow section is 29 ft. wide and has four siphon units. Each unit is 6 ft. wide by 5 ft. high at its throat and the interior crest elevations are 66.8 for unit one, 66.6 for unit two, 66.7 for unit three, and 66.9 for unit four. Just upstream of the dam, a reinforced concrete girder foot bridge spans the approach channel.

Bedrock outcrops consisting of very massive and only slightly jointed granite are located on the right abutment above the dam. It appears the dam is founded on bedrock since the design drawings contain logs of test borings cored into bedrock.

The downstream face of the dam as shown in Photo's #1,2,3 and 4 is in good condition. Heavy stone revetment downstream of the training wall to the right of the outlet end of the siphon structure has been displaced and their is minor erosion downstream of the right training wall (see Photo #5).

Photos 6 and 7 show the concrete fish structure on the left abutment. The concrete is in generally excellent condition. There is, however, erosion of the downstream earth slope behind the left training wall of the fish ladder.

Photo #8 is a view of the right training wall of the approximately 350 ft. long spillway approach channel. This rubble masonry wall is part of the older dam which was replaced in 1935. The wall appears to be in good condition in spite of the fact that the joints are not mortared.

A bridge which is in fair condition spans the spillway approach channel. The spillway approach channel training walls are in generally excellent condition with no evidence of movement or distress of any kind. The concrete is in excellent condition with only minor random cracking observed and minor efflorescence (see Photo Nos. 9 & 10). The downstream face of the concrete ogee overflow section appears to be in good condition (see Photo No. 11).

The outlet end of the siphon spillway structure appears to be in good condition. As shown on Photo 12, only two of the four siphons were operating at the time of the inspection.

There is a sluiceway under the ogee over flow section at the intersection with the siphon structure as shown on Photo 13. Though the sluice gate was not operated during the time of inspection it was reported to be in good working condition. There is an approximately 3 ft. long by ½ in. to 1 in. wide crack in the concrete to the left of the sluiceway on the siphon structure wall.

c. Reservoir Area. The pond's shoreline upstream of the dam appears to be stable with no evidence of sliding. The area above the easterly side of the pond is a densely developed residential area. The north shore of the pond is occuppied in part by a Federal housing project and the remainder by other residential development. The land along the westerely shore of the pond is densely developed. The shore along the southern portion of the pond is bordered by extensive gravel pit areas.

d. Downstream Channel. The river slopes downstream of the dam on both the left and right embankments were inspected and no seepage was emanating from the slopes. Discharges from Whitmans Pond Dam flow into Iron Hill Reservoir which is a small impoundment about 850 ft. long and about 100 ft. wide. Iron Hill Reservoir is impounded by Iron Hill Dam which is also a concrete gravity structure with siphon spillways. Herring Brook is located below the Iron Hill Dam and extends downstream for a distance of about 3,000 ft. until it reaches the Weymouth Back River just below the Penn Central Railroad. At the toe of Iron Hill Dam there is a flood control conduit which parallels Herring Brook for a distance of about 1,800 ft. and ends a short distance downstream of Broad Street. The flood control conduit has a carrying capacity of about 2,500 cfs. It was constructed as part of the flood control project and together with the Whitmans Pond Dam and the Iron Hill Dam protects the heavily built-up community of East Weymouth. Part of the East Weymouth community is located in the flood plain of Herring Brook. Below Broad Street the old Herring Brook channel and the flood control conduit join together and flow through a recently constructed open channel, and then under the Penn Central Railroad, and into the Weymouth Back River.

3.2 Evaluation

The visual inspection has adequately revealed key characteristics of the dam as they may relate to its stability and integrity. The dam and appurtenant works were judged to be in good physical condition. Minor erosion of the right earth abutment was noted at the downstream end of the dam just beyond the riprap protection beyond the siphon spillway structure. There is also erosion of the left earth abutment at the downstream end of the fish ladder. There is no regular periodic maintenance program.

SECTION 4 - OPERATIONAL AND MAINTENANCE PROCEDURES

4.1 Operational Procedures

a. General. The dam is owned and operated by the Town of Weymouth. It is operated in conjunction with the Iron Hill Dam located about 850 ft. downstream as a means of flood protection for the community located downstream and for maintaining water levels in Whitmans Pond for recreational uses.

b. Description of any Warning System in Effect. No warning system is in effect at Whitmans Pond Dam.

4.2 Maintenance Procedures

a. General. There is no documented periodic maintenance program in effect at Whitmans Pond Dam. There are, however, a few items which require periodic maintenance, such as: the removal of brush growth from the abutments; the upkeep of the concrete in the spillway structures and training walls; keeping the overflow section spillway free of debris; keeping the trash racks at the entrance of the siphon spillways free from debris; surveillance of the abutment slopes with regards to erosion; and maintenance of the sluice gate.

b. Operating Facilities. The only operating facility for the dam is the sluice gate which appears to be well maintained and was reported to be in operating condition.

4.3 Evaluation

Overall maintenance of the facility is good. Specific maintenance items are evaluated as follows; there was very little brush growth on the slopes of the abutments; there was only a small amount of debris on the trash racks at the entrance to the siphon spillways; the concrete appeared to be in good condition; there was a small amount of erosion noted in the downstream channel embankment on the right side of the channel; and there was erosion of the abutment slopes at the lower end of the left training wall of the fish ladder. The owner should establish a formal downstream warning system for the dam in the event of an emergency.

SECTION 5 : EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES

5.1 General.

Whitmans Pond Dam is a mass concrete dam consisting of three major elements; a fish ladder, an overflow section, and a siphon spillway structure containing four siphon units. The dam impounds a normal storage of about 550 acre-ft. with provisions for an additional 1,450 acre-ft. of capacity in its surcharge space to the top of dam. It is basically a low surcharge - high spillage facility used to impound water for recreational purposes and to provide flood control protection for a downstream community. The spillways are capable of discharging about 3,150 cfs with the surcharge to the top of dam. The general topographic characteristics of the 12.1 sq. mi. drainage basin is best described as flat and coastal, which rises from elevation 66.6 at spillway crest to elevation 170. The drainage area contains a mixture of forested areas and heavily developed urban areas. Weymouth Great Pond which has a drainage area of about 2.9 sq. mi. is located in the upper reaches of the drainage area. Because of the substantial volume of storage available in Weymouth Great Pond, the drainage area above the outlet of the pond was not included in calculating the test flood for Whitmans Pond Dam. Thus the net area used for calculating the test flood inflow was 9.2 sq. mi.

5.2 Design Data.

Three reports were located which contain preliminary hydrologic and hydraulic design data for the dam. The titles of these reports are as follows: (1) Town of Weymouth, Massachusetts, Report to Drainage Committee Upon Storm Water Drainage, dated March 11, 1957; (2) Town of Weymouth, Massachusetts, Appendix to Report to, Drainage Committee Upon Storm Water Drainage, dated March 11, 1957; and (3) Site Investigations for Flood Control Works at Herring Brook and Whitmans Pond Outlet, Weymouth, Massachusetts, dated June 20, 1969.

All three of the reports were prepared by Metcalf and Eddy, Engineers, Boston, Massachusetts. The reports were reviewed by the inspection team and are on file at the Weymouth Town Engineer's Office. The following was extracted from the 1969 Report: "According to the 1957 Report, the peak rate of runoff which could be expected to Whitmans Pond was estimated at 5,100 cfs. This is about 75 percent of the "maximum" flood peak indicated by using the Kinnison-Colby formula. Coefficients used in the formula are based on the area being developed to its estimated fullest extent, thus producing the maximum expected flows.....Using the storage available in Whitmans Pond and the flood routing method of computation, the peak rate of outflow to be expected from the pond was estimated at approximately 2,500 cfs".

5.3 Experience Data.

No records are available in regard to past operation of the reservoir, nor of surcharge encroachments and flows through the spillway of the present dam. However, in the 1957 Reports mentioned above, it was estimated that the maximum discharge over the dam which preceded the

present dam at Whitmans Pond was 1,100 cfs during hurricane "Diane" of Aug. 18-19, 1955. It was estimated that the surcharge elevation during the storm peaked at about elevation 71.5 ft.

5.4 Test Flood Analysis.

Hydrologic and hydraulic characteristics of Whitmans Pond Dam and drainage area were evaluated in accordance with the criteria given in Recommended Guidelines for Safety Inspection of Dams. As indicated in Section 1.2, paragraphs c and d, Whitmans Pond Dam is classified as intermediate in size and has a high hazard potential. The recommended test flood for hydraulic evaluation of such a dam is a full Probable Maximum Flood, (PMF).

Precipitation data were obtained from Hydrometerological Report No. 33, which for this area of Massachusetts is about 23.5 in of 6 hour maximum rainfall over a 10 square mile area. This value was then reduced by 20 percent to allow for basin size, shape and fit factors, and an additional 0.4 in. was deducted for infiltration losses. The six hour rainfall was distributed into one hour incremental periods as suggested in COE Publication EC 1110-2-1411.

A triangular incremental unitgraph was assumed for the inflow hydrograph using a computed lag time of 13.2 hours to derive a time-to-peak for the triangular hydrograph of 11.23 hours (see computations on Sheets D-11 and D-12, Appendix D). The test flood hydrograph is shown on Sheet D-13, Appendix D, indicating a peak inflow of about 6,850 cfs or a CSM value of about 565 cfs. This value is in close agreement with the peak inflow derived by the Kinnison-Colby formula in the 1957 Report and is also in close agreement with the envelope curve value given in the March 1978 Preliminary Guidance for Estimating Maximum Probable Discharges for Flat and Coastal Areas for a drainage area of 9.2 sq. mi.

Discharge tables and curves for the spillway facilities and for over the top of the dam are shown on Sheets D-6 thru D-10, Appendix D. The discharge through the 2.5 ft. square sluice has been neglected.

Flood routings were performed for both the test flood and a ½PMF. Results of these routings are shown on Sheets D-13 and D-14, Appendix D, and are summarized as follows:

Flood Magnitude	Routed Test Flood Inflow (cfs)	Maximum Res. El (ft. NGVD)	Max. Head Over Dam (ft.)	Routed Test Flood Outflow (cfs)
PMF (Test Flood)	6,850	75.1	2.7	5,100
½PMF	3,425	70.5	None	2,480

From the above table it can be seen that the project will not pass the routed test flood outflow without overtopping the dam by 2.7 ft. The project, however, can handle about 62 percent of the routed test outflow without overtopping the dam.

5.5 Dam Failure Analysis.

Whereas the dam is a relatively low massive concrete structure, it was assumed that the most likely place for failure would be in the abutment area. For this analysis a 25 ft. wide section of the abutment was assumed to fail. With the water surface level at top of dam and using an orifice formula, the discharge through the failed section was calculated to be 3,370 cfs. The spillway discharge at the time of failure would be about 3,150 cfs resulting in a total discharge of about 6,500 cfs.

The outflow from Whitman Pond Dam discharges into Iron Hill Reservoir, passes over Iron Hill Dam and thence along Herring Brook through the heavily built-up community of East Weymouth to the Weymouth Back River. Below Iron Hill Dam there is a flood control conduit which carries flows from the Iron Hill Dam for a distance of about 1,800 ft. to an open channel about 1,400 ft. upstream from the Penn Central Railroad. The railroad is supported by a high embankment through which passes an 8 ft. wide by 11 ft. high box culvert, and two 10 ft. dia. concrete pipes, which carry flows from Herring Brook to the Weymouth Back River. It is estimated that the breach discharge would be about 5,800 cfs at the railroad crossing and that the stage in the brook would be about at elevation 27, which is a rise of about 12 ft. above that to be expected from the spillway discharge. Water would be pooled over more than 50 percent of the reach between Iron Hill Dam and the Penn Central Railroad causing flooding of the Pingree School up to a depth of 7 ft., and flooding four industrial buildings, seven commercial buildings and a few houses all located downstream of Broad Street to a depth ranging between 1 and 5 ft. It is estimated that no significant flooding of structures would exist in this area due to the spillway discharge alone. Above Broad Street the flood control conduit would carry about 2,500 cfs of the breach discharge and the remaining discharge of 4,000 cfs would travel down the original Herring Brook Channel. It is estimated that about 16 commercial buildings and about 6 houses would be flooded by the breach discharge to depths ranging from 1 to 5 ft. In addition to the flooding of structures several streets would be flooded in the damage reach. Based upon the carrying capacity of the flood control conduit and the original Herring Brook channel it is estimated that only minor flooding of the area between Broad Street and the Iron Hill Dam would occur due to the maximum spillway discharge of 3,150 cfs.

In summary, a school building, four industrial buildings, about 23 commercial buildings, and about 7 houses, as well as several local streets are within the area of potential flooding. Therefore, in accordance with the Recommended Guidline for Safety Inspection of Dams the project is classified as having a high hazard potential. There is also the potential for the loss ofmore than a few lives. The area of potential flooding is shown in Appendix D, page D-19.

SECTION 6 - EVALUATION OF STRUCTURAL STABILITY

6.1 Visual Observations

There are no design calculations available for review of the structural stability of the dam and appurtenant structures; however, the relatively wide base slab for the ogee section with respect to its height and the fact that it is founded on a sound granite bedrock, plus the absence of any distress or displacements in the structure indicate that the dam is stable in its present state. However, some minor repair of riprap and of eroded areas as described in Section 7 should be undertaken.

6.2 Design and Construction Data

Design drawings for the dam and the Herring Brook Flood Control conduit consisting of twenty-two sheets were available for review. These sheets show the details for the design of the structure as well as the nature of the foundation soil and rock conditions beneath the structure as revealed by approximately twenty-two (22) borings taken at this site and at the Iron Hill Dam site. Although calculations pertaining to the stability of the concrete gravity sections were not available for review, it may be concluded on the basis of the design drawings and the visual inspection that the gravity ogee overflow section and spillway siphon structure are presently in a stable condition.

6.3 Post Construction Changes

There are no records of any major post construction changes made to the dam over the course of its history. The dam was constructed in 1970 and replaced an older dam which formerly existed at the site. One remnant of the older dam is a masonry rubble gravity training wall on the right abutment approach channel. This retaining wall appears to be in good condition even though the joints are not mortared.

6.4 Seismic Stability

The dam is located in Seismic Zone No. 3. Phase I Guidelines recommend, as a minimum, that suitable analysis made by conventional equivalent static load methods should be on record for dams in Zone No. 3. As far as can be determined, no such analysis has been made.

SECTION 7

ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES

7.1 Dam Assessment

a. Condition. On the basis of the Phase I visual examination, Whitmans Pond Dam is judged to be in good physical conditon; however, because the spillway will only pass 62 percent of the routed test flood outflow, the dam has been given an overall rating of fair.

b. Adequacy of Information. Though the lack of in-depth engineering data did not allow for a definitive review, the information that was recovered, together with the visual inspection, was considered adequate for the purpose of making an assessment of the performance of the dam.

c. Urgency. The recommendations and remedial measures enumerated below should be implemented by the owner within one year after receipt of this Phase I Inspection Report.

7.2 Recommendations

It is recommended that the owner engage a qualified engineer to make investigations and studies of the following.

(1) Perform a detailed hydraulic and hydrologic study to further assess the need for and means to increase the project discharge capacity.

(2) Make a seismic investigation of the dam and analysis by conventional equivalent static load methods.

7.3 Remedial Measures

a. Operating and Maintenance Procedures.

(1) Repair erosion at the downstream end of the left training wall of the fish ladder with compacted gravel fill and locally place riprap in the vicinity of the water surface on the downstream side of the end of the retaining wall.

(2) Repair the slope behind the right retaining wall on the right abutment with suitable compacted earthfill.

(3) Develop an "Emergency Action Plan" that will include an effective preplanned downstream warning system, locations of emergency equipment, materials and manpower, authorities to contact and potential areas that require evacuation. The plan will also include round-the-clock monitoring of the project during periods of heavy precipitation.

(4) Institute procedures for an biennial technical inspection of the dam and its appurtenant structures.

(5) Implement a regular periodic maintenance program.

7.4 Alternatives

There are no feasible alternatives to the above recommendations.

Appendix A

Inspection Checklist

VISUAL INSPECTION CHECKLIST
PARTY ORGANIZATION

PROJECT Whitmans Pond Dam DATE 18 April 1980

OWNER: Town of Weymouth, MA. TIME 1:30 PM

WEATHER Clear/Warm

W.S. ELEV. 70.0 U.S. DN.S.

PARTY:

1. Peter B. Dyson
2. Pasquale E. Corsetti
3. Roger F. Berry
4. Carl J. Hoffman
5. William S. Zoino
6. Robert Millett
7. _____
8. _____
9. _____
10. _____

PROJECT FEATURE	INSPECTED BY	REMARKS
1. Hydrologic	Roger F. Berry	LBA
2. Structures/Hydraulics	Carl J. Hoffman	LBA
3. Geothechnical	William S. Zoino	GZA
4. General Features	Peter B. Dyson	LBA
5. General Features	Pasquale E. Corsetti	LBA
6.		
7.		
8.		
9.		
10.		

LBA- Louis Berger & Associates, Inc.
GZA- Goldberg-Zoino & Associates, Inc.

PERIODIC INSPECTION CHECKLIST

PROJECT Whitmans Pond Dam DATE 18 April 1980

PROJECT FEATURE Sluiceway (low level outlet) NAME

DISCIPLINE Hydraulics/Structures NAME Carl J. Hoffman

AREA EVALUATED	CONDITIONS
OUTLET WORKS - TRANSITION AND CONDUIT	
General Condition of Concrete	Good
Rust or Staining on Concrete	None
Spalling	None
Erosion or Cavitation	None
Cracking	None
Alignment of Monoliths	NA
Alignment of Joints	NA
Numbering of Monoliths	NA

PERIODIC INSPECTION CHECKLIST

PROJECT Whitmans Pond Dam DATE 18 April 1980

PROJECT FEATURE Ogee Shaped Spillway NAME

DISCIPLINE Hydraulics/Structures NAME Carl J. Hoffman

AREA EVALUATED	CONDITIONS
OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS	
a. Approach Channel	
General Condition	Good
Loose Rock Overhanging Channel	None
Trees Overhanging Channel	None
Floor of Approach Channel	Not Visible
b. Weir and Training Walls	
General Condition of Concrete	Good
Rust or Staining	Minor
Spalling	None
Any Visible Reinforcing	None
Any Seepage or Efflorescence	None
Drain Holes	NA
c. Discharge Channel	
General Condition	Good
Loose Rock Overhanging Channel	None
Trees Overhanging Channel	None
Floor of Channel	Not Visible
Other Obstructions	None

PERIODIC INSPECTION CHECKLIST

PROJECT Whitmans Pond Dam DATE 18 April 1980

PROJECT FEATURE Siphon Spillways NAME

DISCIPLINE Hydraulics/Structures NAME Carl J. Hoffman

AREA EVALUATED	CONDITIONS
OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS	
a. Approach Channel	
General Condition	Good
Loose Rock Overhanging Channel	None
Trees Overhanging Channel	None
Floor of Approach Channel	Not Visible
b. Weir and Training Walls	
General Condition of Concrete	Good
Rust or Staining	Minor
Spalling	None
Any Visible Reinforcing	None
Any Seepage or Efflorescence	None
Drain Holes	NA
c. Discharge Channel	
General Condition	Good
Loose Rock Overhanging Channel	None
Trees Overhanging Channel	None
Floor of Channel	Not Visible
Other Obstructions	None
Minor cracking of concrete	

PERIODIC INSPECTION CHECKLIST

PROJECT: Whitmans Pond Dam **DATE:** 18 April 1980

AREA EVALUATED	CONDITIONS
Dam Embankment	N/A
Dike Embankment	N/A
Outlet Works - Intake Channel and Intake Structure	N/A
Outlet Works - Control Tower	N/A
Outlet Works - Outlet Structure and Outlet Channel	N/A
Outlet Works - Service Bridge	N/A

Appendix B

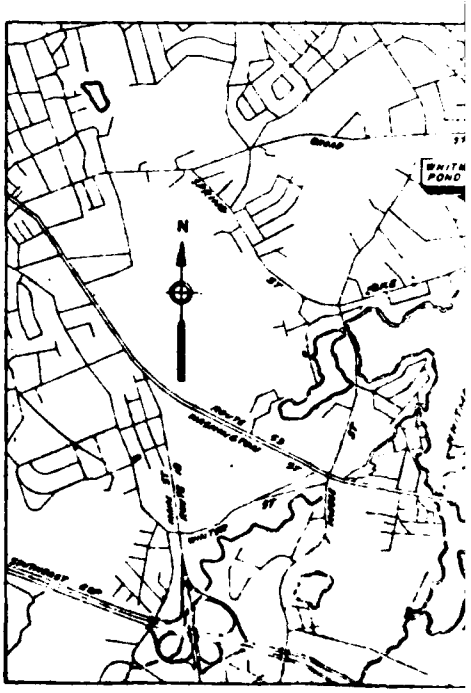
Engineering Data

COMMONWEALTH OF M
DEPARTMENT OF PU
DIVISION OF WA
PROPOSED FLOOD CON
AND SIPHON SP
HERRING BR
WEYMOUTH, MASSA

GENERAL NOTES

1. ALL ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL.
2. LOCATIONS OF UTILITIES AND EXISTING STRUCTURES ARE APPROXIMATE. EXACT LOCATIONS ARE TO BE DETERMINED BY THE CONTRACTOR IN THE FIELD.
3. FOR NOTES OF TEST BORINGS SEE SHEET 21.
4. FOR GENERAL STRUCTURAL NOTES SEE SHEET 20.
5. SURVEY INFORMATION IS CONTAINED IN FIELD BOOK #1059 OF THE DEPARTMENT OF PUBLIC WORKS, DIVISION OF WATERWAYS.

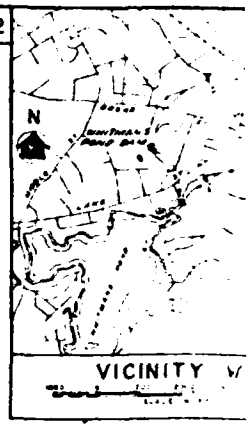
INDEX TO DRAWINGS



LOCATION PLAN

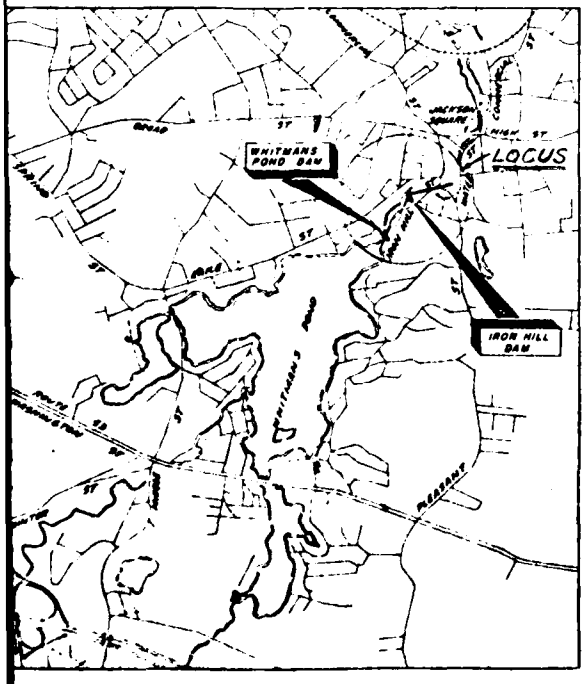
SHEET NO. 1 OF 22

OF MASSACHUSETTS
F PUBLIC WORKS
WATERWAYS
CONTROL CONDUIT
N SPILLWAYS
G BROOK
IASSACHUSETTS



LEGEND

59.7	SPOT ELEVATION
----62----	EXISTING CONTOUR
——62——	NEW CONTOUR
—— - - ——	EASEMENT LINE
—— — ——	PROPERTY LINE
—— - ——	SURVEY LINE
△"A"	SURVEY POINT
B-1 EL. 73.4	BORING NUMBER AND GROUND ELEVATION
——x——	FENCE
HYD.	FIRE HYDRANT
—— 8" W ——	WATER
—— 2" G ——	GAS
—— D ——	DRAIN
C.B.	CATCH BASIN
416	BUILDING AND NUMBER
36"	TREE AND TRUNK SIZE
SECTION CUT NUMBER DESIGNATION / SHEET UPON WHICH SECTION APPEARS — A / 4	SECTION CUT
•	EXISTING BORING



LOCATION PLAN

PROPOSED FLOOD CONTROL CONDUIT & SIPHON SPILLWAYS
HERRING BROOK
PLEASANT STREET TO WHITMANS
WEYMOUTH

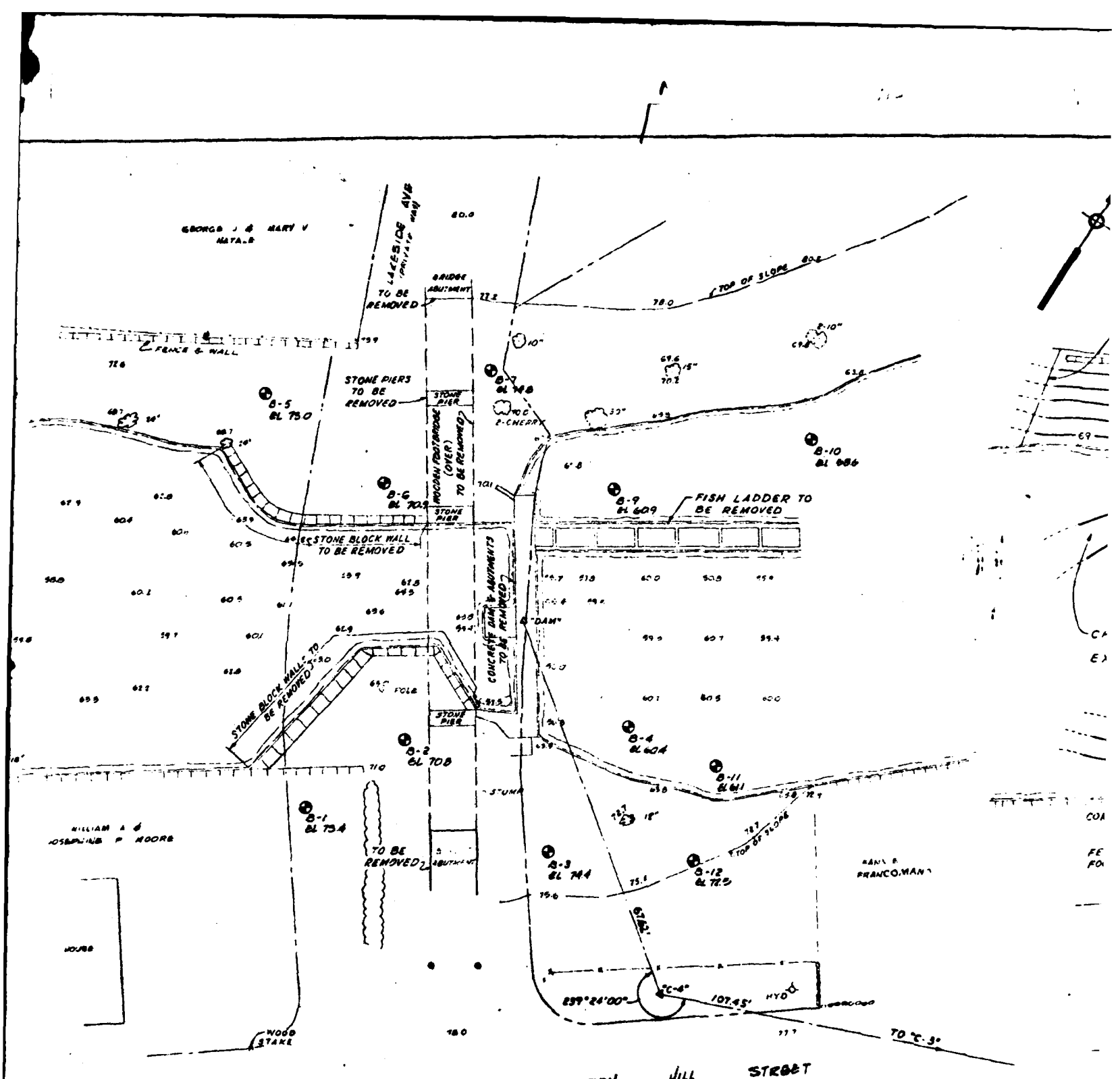
DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS

METCALF & EDDY, INC. | ENGINEERS

OCTOBER, 1969	DESIGNED BY	
D.P.W. REVIEW BY JCS DATE 9/62	TRACED BY	
	APPROVED BY	DEPUTY CHIEF ENGINEER

CONTRACT NO. 2664 | ACC. NO. 047

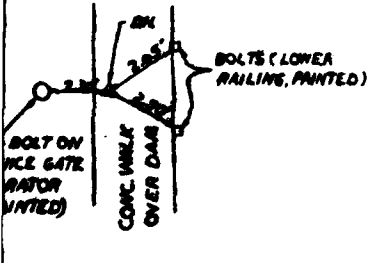
248



PLAN OF EXISTING DAM

SCALE: 1" = 10'

TIES TO "DAM"



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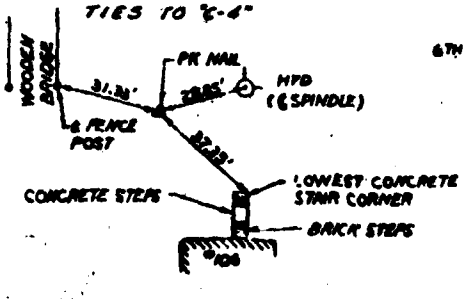

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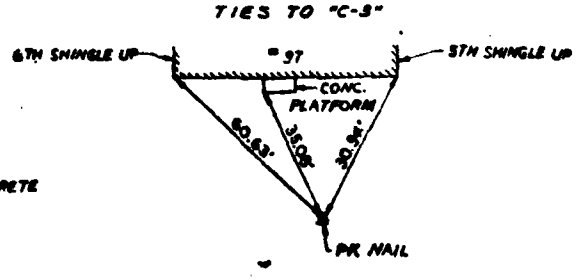
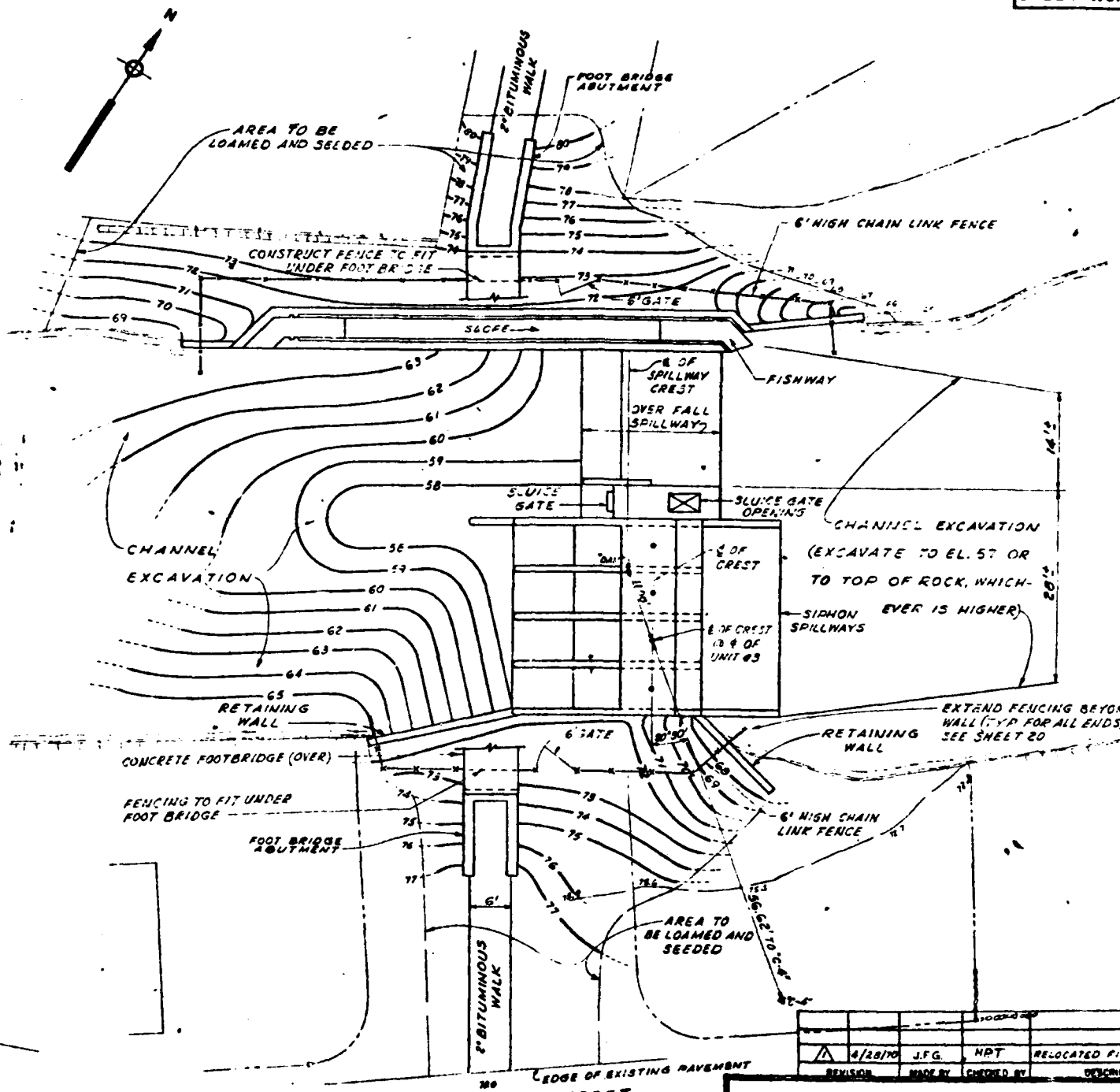




PLAN OF PROPOSED DAM, SIPHON SPILLWAYS AND FOOT BRIDGE

SCALE: 1" = 10'

10 0 10 20
SCALE IN FEET

NOTE:
FOR LOCATION PLAN OF FOOT BRIDGE AND RETAINING WALLS SEE SHEET 6.

REVISION	MADE BY	CHECKED BY	DESCRIPTION
1 4/28/70	J.F.G.	HPT	RELOCATED FISHWAY

PROPOSED FLOOD CONTROL CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMANS POND WEYMOUTH

WHITMANS POND - SITE PLAN

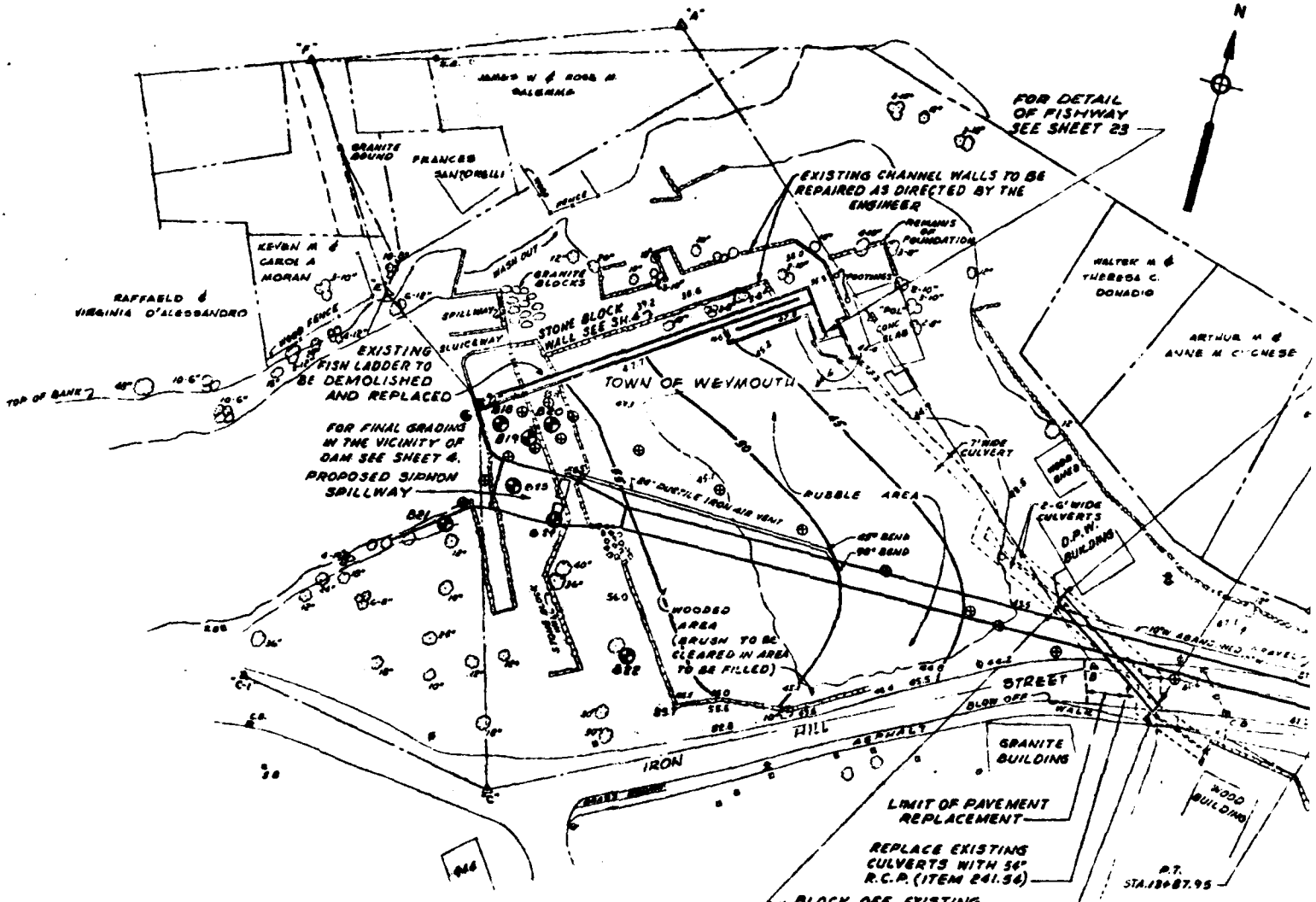
DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS

METCALF & EDDY, INC. | ENGINEERS
BOSTON · PALO ALTO

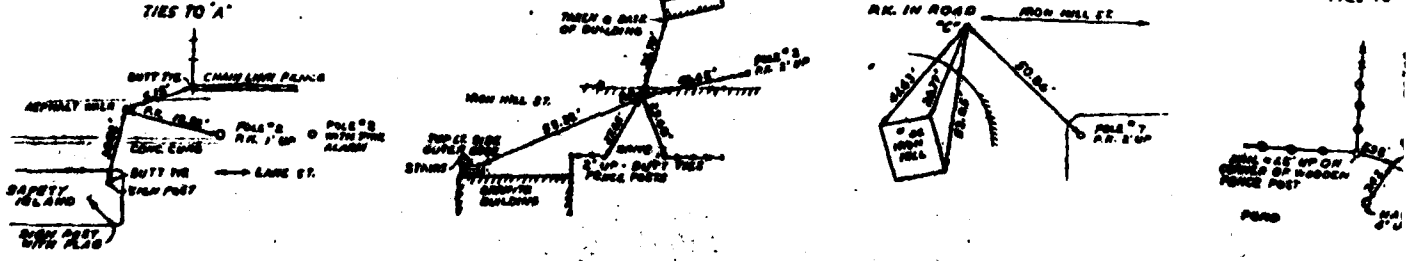
OCTOBER, 1969	DESIGNED BY HPT
G.P.W. REVIEW BY ____ DATE ____	TRACED BY J.F.G.
	APPROVED BY V.A.P.

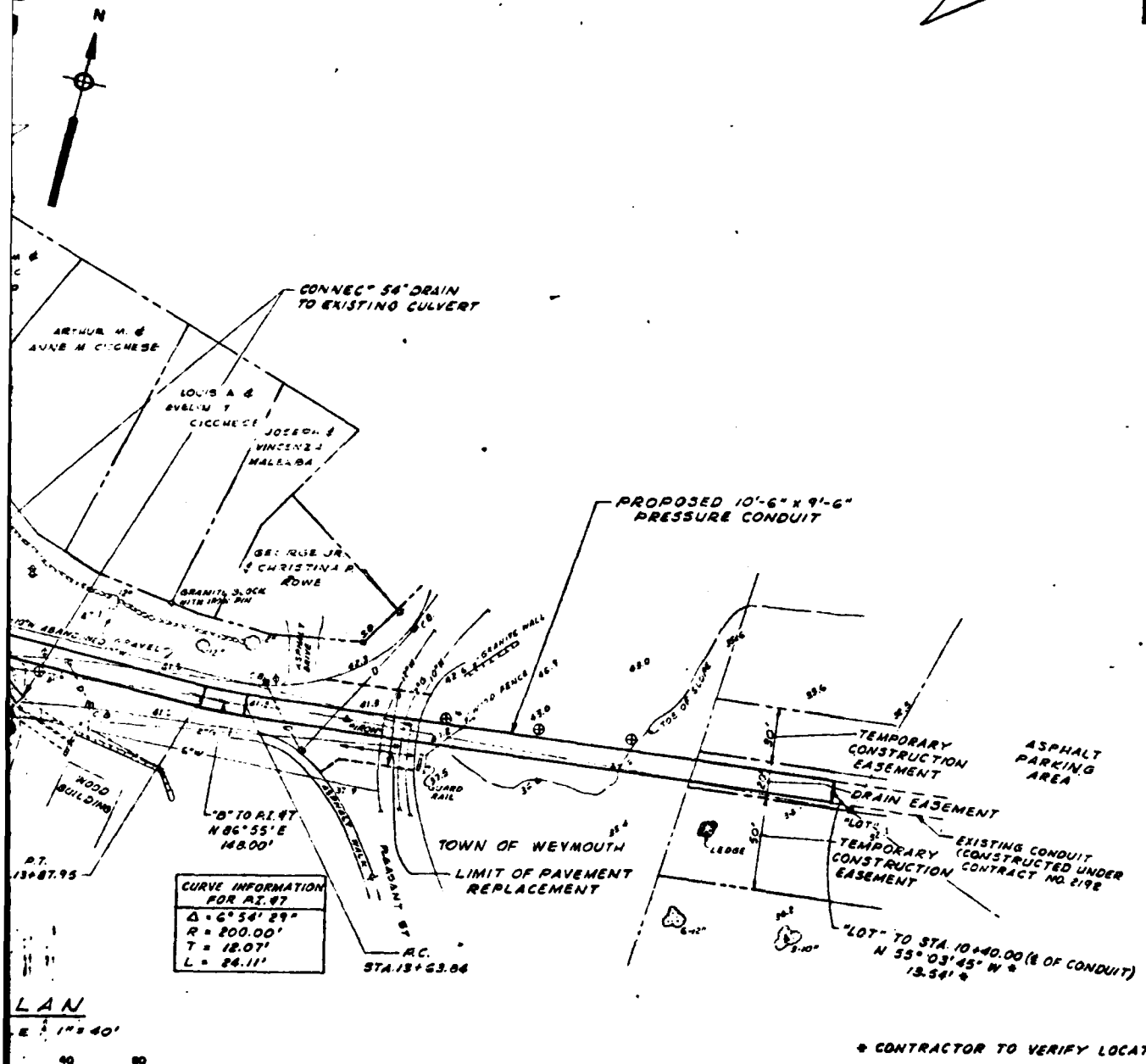
CONTRACT NO. 2664 | **ACC. NO. 04762**

2484



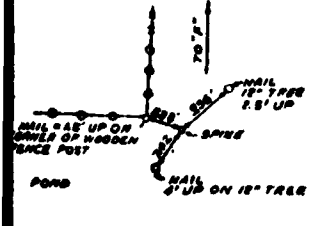
SURVEY DATA		
STA.	DISTANCE	BEARING
A TO B	416.36	S 86-30 E
B TO C	330.46	S 65-46 W
C TO D	210.00	N 13-55 W
C TO C_1	190.13	N 77-02 W
D TO E	79.00	N 51-40 W
E TO F	126.23	N 31-41 W
F TO A	190.92	S 73-00 E
D TO IRON	219.77	S 86-03 E
IRON TO LOT	279.76	S 87-34-15 E





* CONTRACTOR TO VERIFY LOCATION.

TIES TO "E"



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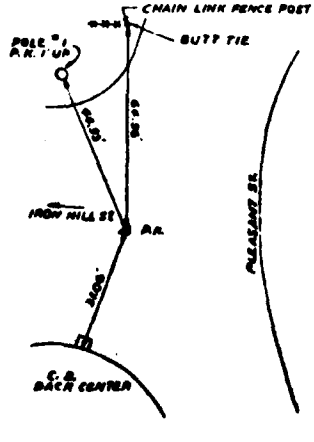


REVISIONS	MADE BY	CHECKED BY	DESCRIPTION
10-13-70	JMA	HPT	REMOVE PORTION OF 54" DRAIN
9-9-70	-E.R.C.-	HPT	EXTEND 54" RCP AND PAVEMENT

PROPOSED FLOOD CONTROL
CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMANS POND
WEYMOUTH

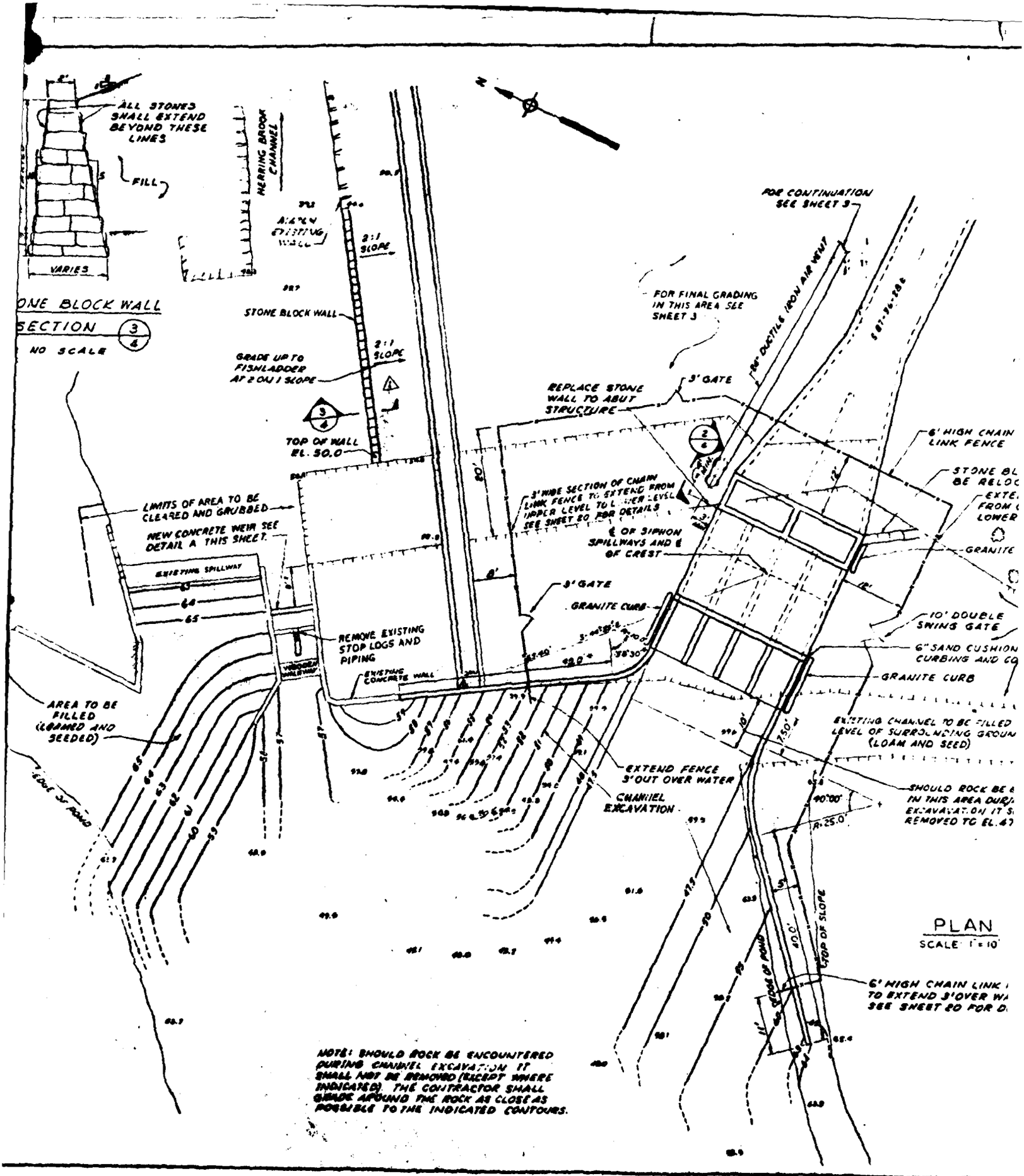
IRON HILL DAM - SITE PLAN

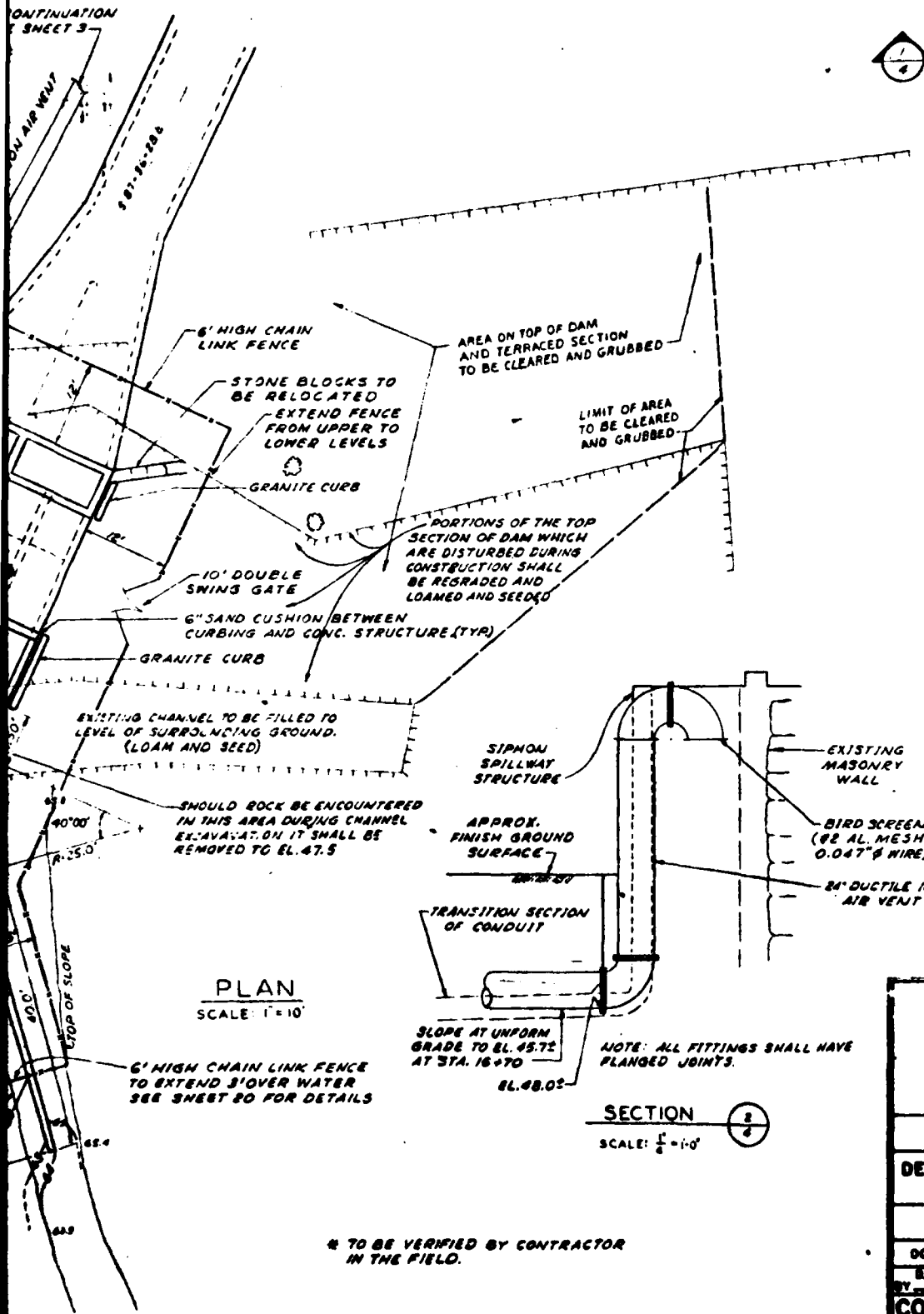
DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS

METCALF & EDDY, INC. | ENGINEERS
BOSTON · PALO ALTO

OCTOBER, 1969	DESIGNED BY HPT
DATE REVIEW BY ____ DATE ____	TRACED BY JES
	APPROVED BY W.F.A.

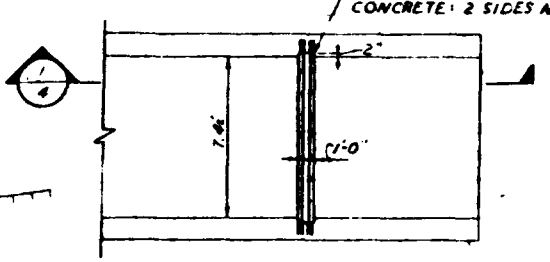
CONTRACT NO. 2664 | ACC. NO. 04762-C


ALL STONES SHALL EXTEND BEYOND THESE LINES
FILL
VARIES
HERRING BROOK CHANNEL
ALIGN EXISTING WALL
2:1 SLOPE
STONE BLOCK WALL
ONE BLOCK WALL
SECTION 3/4
NO SCALE
GRADE UP TO FISHLADDER AT 2 ON 1 SLOPE
TOP OF WALL EL. 50.0
LIMITS OF AREA TO BE CLEARED AND GRUBBED
NEW CONCRETE WEIR SEE DETAIL A THIS SHEET
EXISTING SPILLWAY
REMOVE EXISTING STOP LOGS AND PIPING
EXISTING CONCRETE WALL
AREA TO BE FILLED (LOAMED AND SEEDED)
EDGE OF POND
FOR CONTINUATION SEE SHEET 3
FOR FINAL GRADING IN THIS AREA SEE SHEET 3
36" DUCTILE IRON AIR VENT
REPLACE STONE WALL TO ABUT STRUCTURE
3' GATE
6' HIGH CHAIN LINK FENCE
3' WIDE SECTION OF CHAIN LINK FENCE TO EXTEND FROM UPPER LEVEL TO LOWER LEVEL SEE SHEET 20 FOR DETAILS
℄ OF SIPHON SPILLWAYS AND ℄ OF CREST
GRANITE CURB
10' DOUBLE SWING GATE
6" SAND CUSHION CURBING AND CO
EXISTING CHANNEL TO BE FILLED LEVEL OF SURROUNDING GROUN (LOAM AND SEED)
EXTEND FENCE 3' OUT OVER WATER
CHANNEL EXCAVATION
SHOULD ROCK BE E IN THIS AREA DURI EXCAVATION IT S REMOVED TO EL. 47
R. 25.0'
40.00'
TOP OF SLOPE
6' HIGH CHAIN LINK TO EXTEND 3' OVER WA SEE SHEET 20 FOR D
PLAN
SCALE 1" = 10'
NOTE: SHOULD ROCK BE ENCOUNTERED DURING CHANNEL EXCAVATION IT SHALL NOT BE REMOVED (EXCEPT WHERE INDICATED) THE CONTRACTOR SHALL GRADE AROUND THE ROCK AS CLOSE AS POSSIBLE TO THE INDICATED CONTOURS.

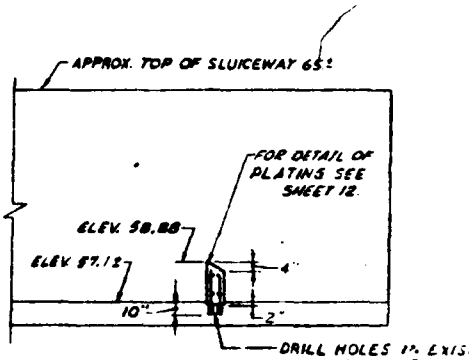


PLAN
SCALE: 1"=10'

SECTION (2/4)
SCALE: 1/4"=1'-0"



PLAN



SECTION (1/4)

DETAIL A
SCALE: 1/4"=1'-0"

REVISION	MADE BY	CHECKED BY	DESCRIPTION
10-9-70	W.S.W.	HPT	EXTEND SET WA
9-9-70	W.S.W.	HPT	ADD F.S.-N.Y.

PROPOSED FLOOD CONTROL CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMANS POND
WEYMOUTH

IRON HILL DAM - PLAN AND DETAILS

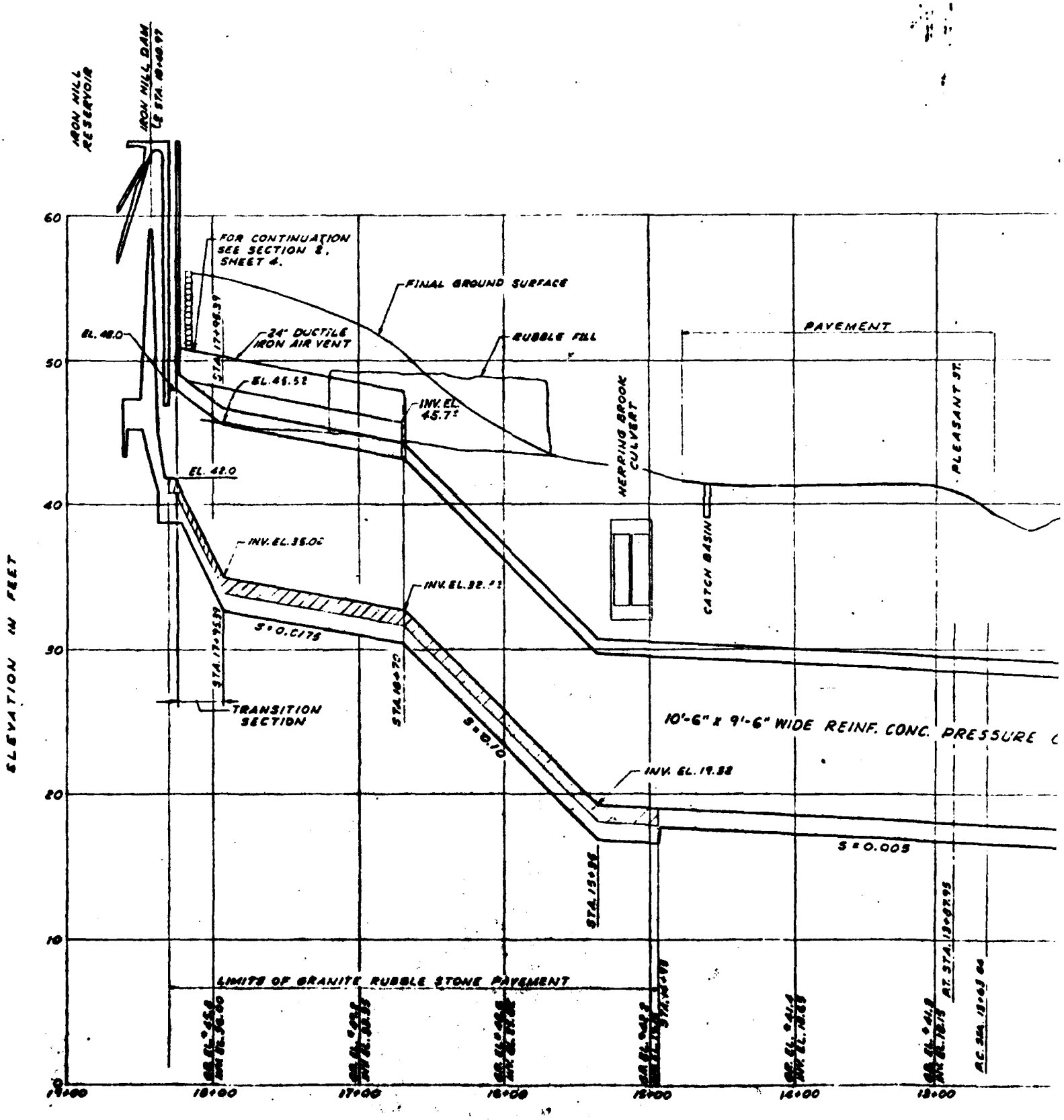
DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS

METCALF & EDDY, INC. | ENGINEERS
BOSTON · PALO ALTO

OCTOBER, 1969	DESIGNED BY HPT
E.P.H. REVIEW BY ____ DATE ____	TRACED BY J.F.G.
	APPROVED BY V.G.G.

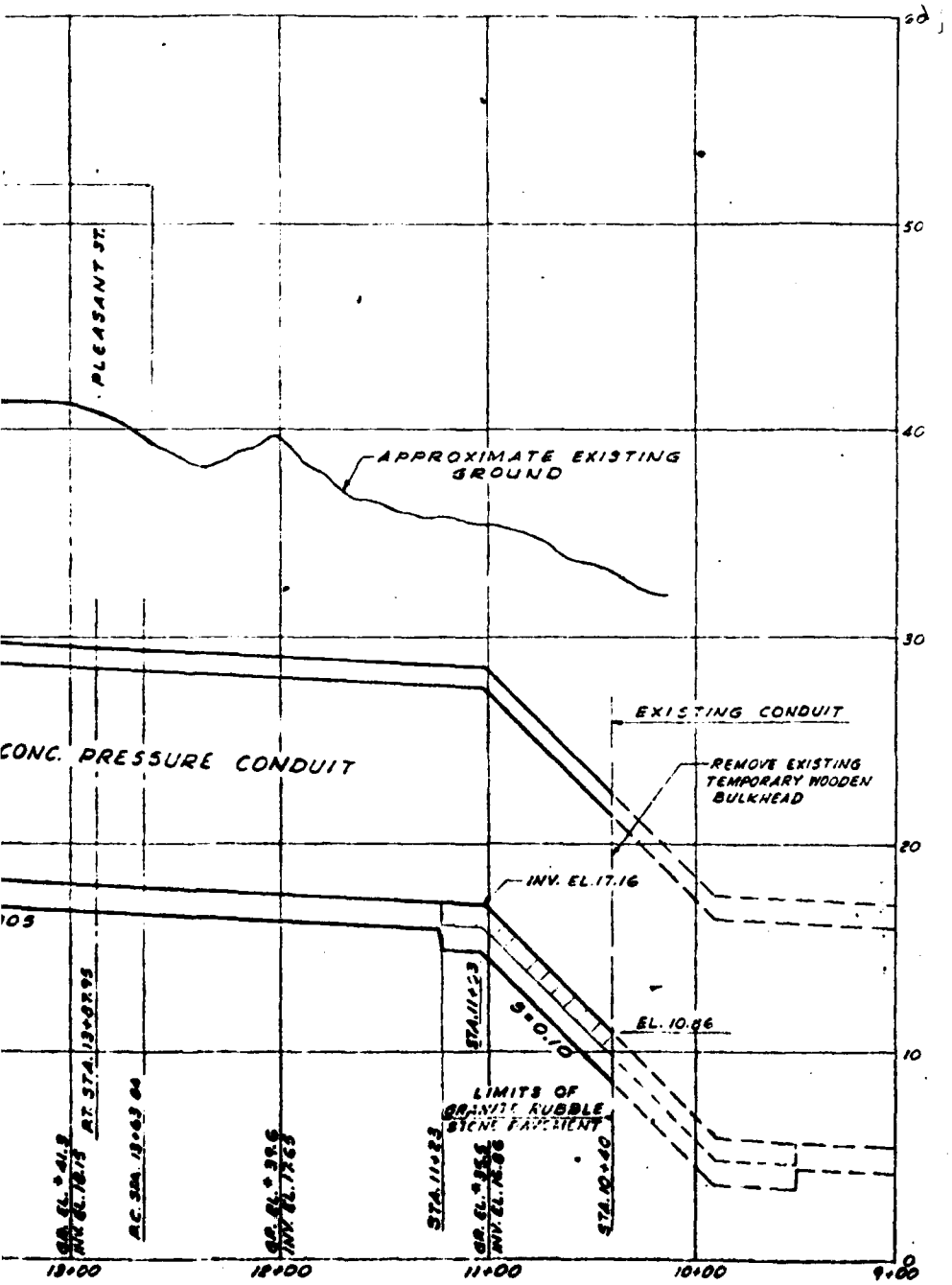
CONTRACT NO. 2664 | ACC. NO. 04762

TO BE VERIFIED BY CONTRACTOR IN THE FIELD.



PROFILE

SCALE: HOR. 1"=40'
VERT. 1"=4'



NOTE:
* APPROXIMATE EXISTING GROUND SURFACE

PROPOSED FLOOD CONTROL
CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMANS POND
WEYMOUTH

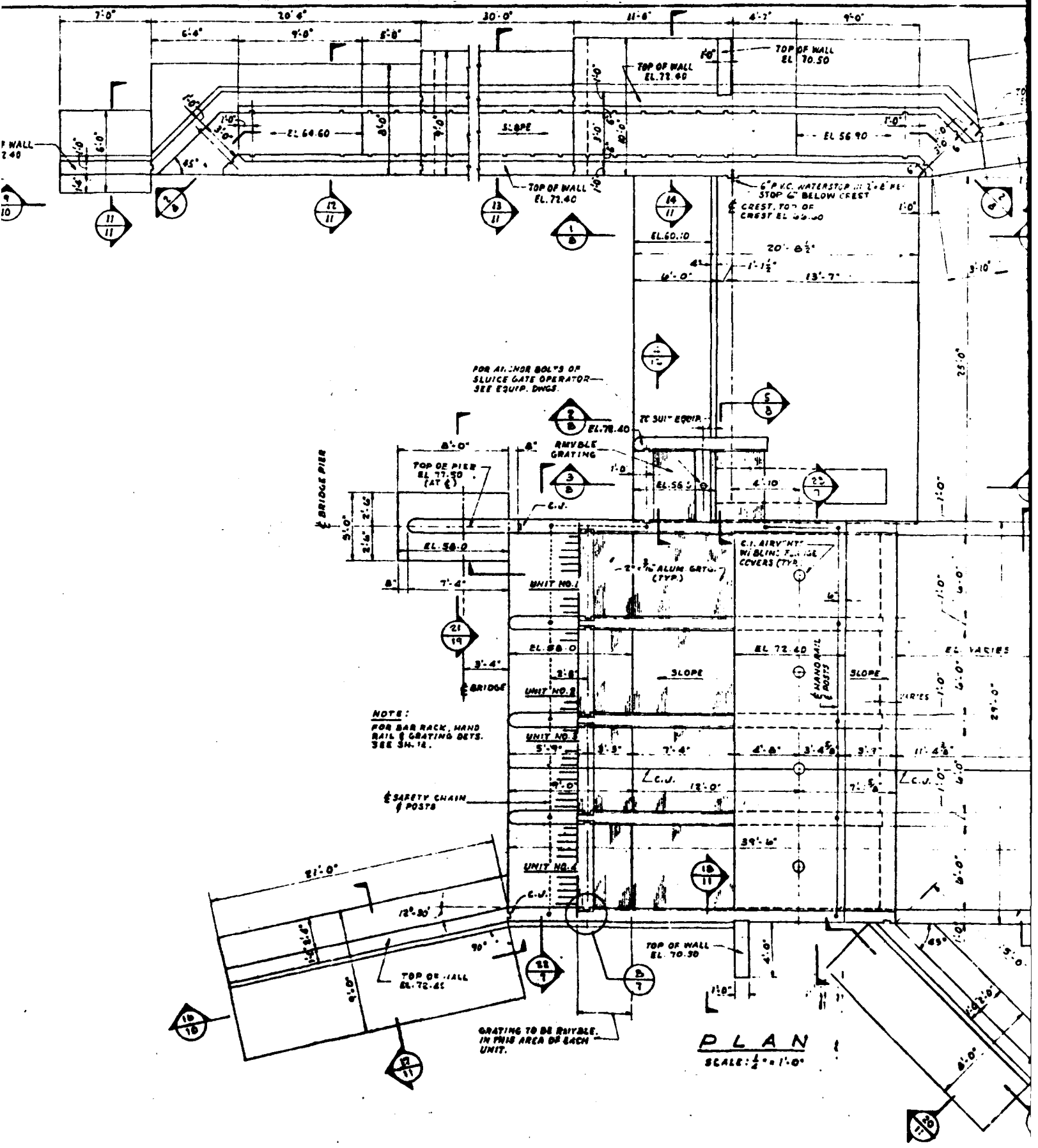
IRON HILL DAM - CONDUIT - PROFILE

DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS

METCALF & EDDY, INC. | ENGINEERS
BOSTON · PALO ALTO

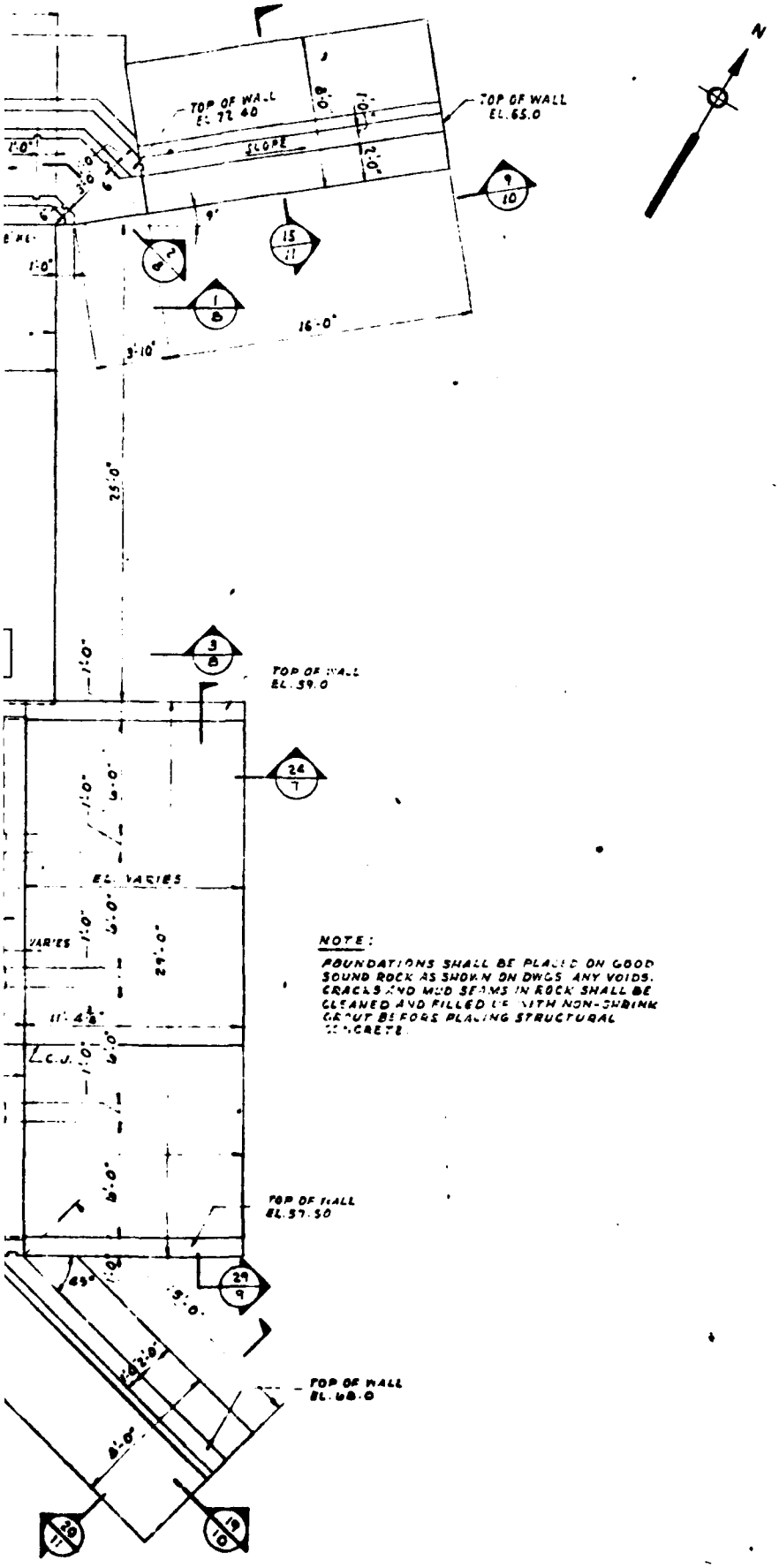
OCTOBER, 1969	DESIGNED BY nPT
DRN. REVIEW BY J.L.L. DATE 11/69	TRACED BY
	APPROVED BY

CONTRACT NO. 2664 | ACC. NO. 04762-E


TOP OF WALL EL. 70.50
TOP OF WALL EL. 72.60
EL. 64.60
SLOPE
EL. 56.90
TOP OF WALL EL. 72.40
6" P.V.C. WATERSTOP
EL. 60.10
20'-6½"
13'-7"
FOR ANCHOR BOLTS OF SLUICE GATE OPERATOR — SEE EQUIP. DWGS.
EL. 72.40
REMOVABLE GRATING
TOP OF PIER EL. 77.50 (AT ℄)
℄ BRIDGE PIER
EL. 56.0
UNIT NO. 1
UNIT NO. 2
UNIT NO. 3
UNIT NO. 4
EL. 68.0
EL. 72.40
SLOPE
℄ HANDRAIL POSTS
EL. VARIES
℄ BRIDGE
℄ SAFETY CHAIN & POSTS
C.J.
NOTE: FOR BAR RACK, HAND RAIL & GRATING DETS. SEE SH. 12.
TOP OF WALL EL. 72.40
GRATING TO BE REMOVABLE IN THIS AREA OF EACH UNIT.
PLAN
SCALE: ½" = 1'-0"

2

SHEET NO. 6 OF 22



NOTE:

FOUNDATIONS SHALL BE PLACED ON GOOD SOUND ROCK AS SHOWN ON DWGS. ANY VOIDS, CRACKS AND MUD SEAMS IN ROCK SHALL BE CLEANED AND FILLED WITH NON-SHRINK GROUT BEFORE PLACING STRUCTURAL CONCRETE.

⚠	4-29-70	D.J.T	R.W.D	RELOCATED FISH LADDER
REVISION		MADE BY	CHECKED BY	DESCRIPTION

PROPOSED FLOOD CONTROL
CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMANS POND
WEYMOUTH

WHITMANS POND—PLAN

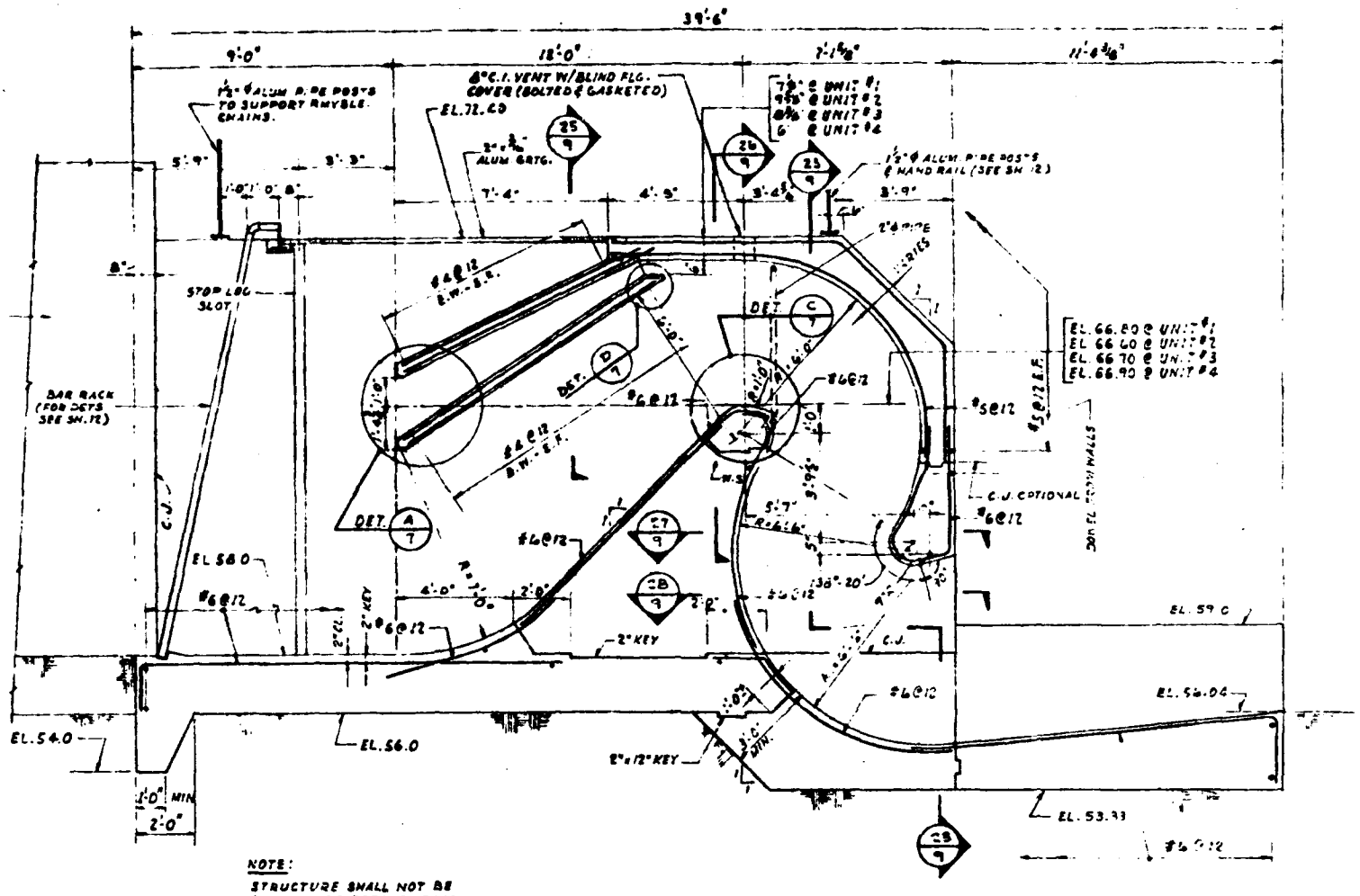
DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS

METCALF & EDDY, INC. | ENGINEERS
BOSTON · SAN JUAN · PALO ALTO

OCTOBER, 1969	DESIGNED BY
D.P.W. REVIEW BY ___ DATE ___	TRACED BY
	APPROVED BY

CONTRACT NO. 2664 | ACC. NO. 04762-F

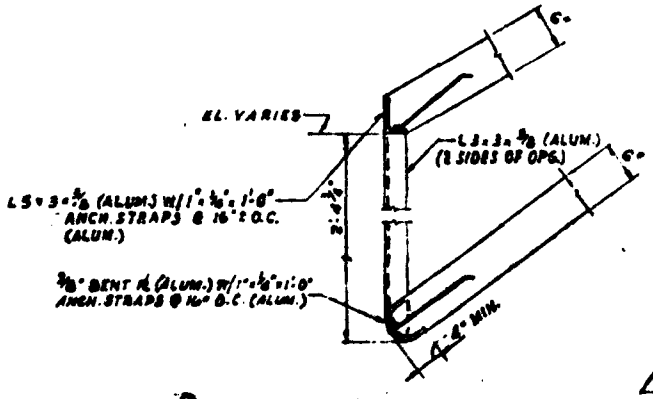
2404-B



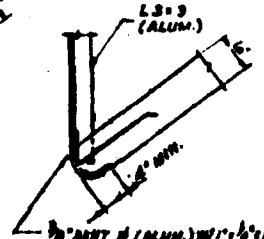
NOTE:
STRUCTURE SHALL NOT BE BACKFILLED BEFORE CRES" AND TOP SLAB ARE COMPLETED.

SECTION (24/6)
SCALE: 3/8" = 1'-0"

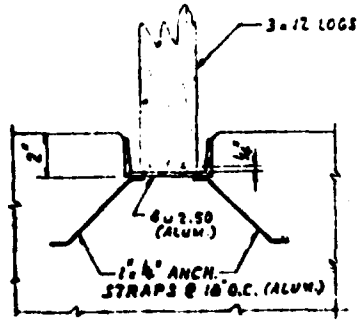
NOTE:
ELEVATIONS SHOWN FOR BOT. OF CONC. NOT TO BE EXCEEDED.



DETAIL (A/7)
SCALE: 1" = 1'-0"



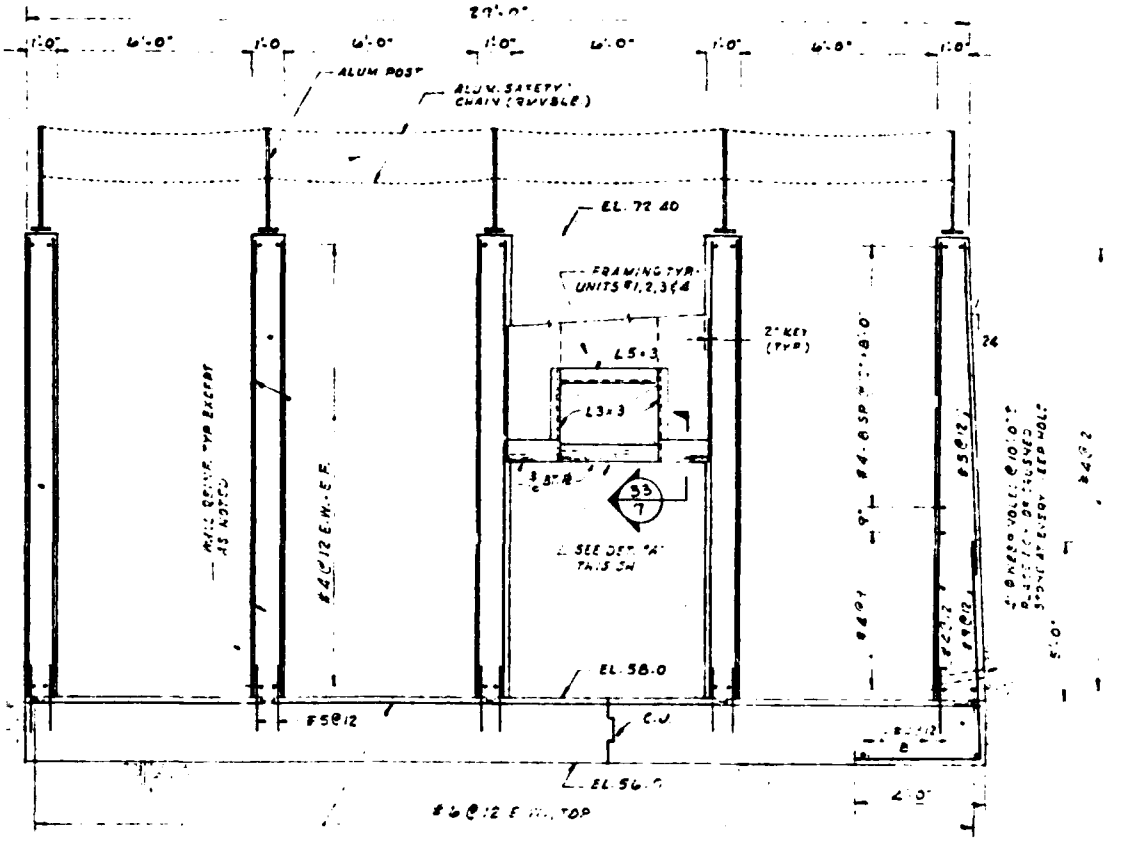
SECTION (35/7,15)
SCALE: 1" = 1'-0"



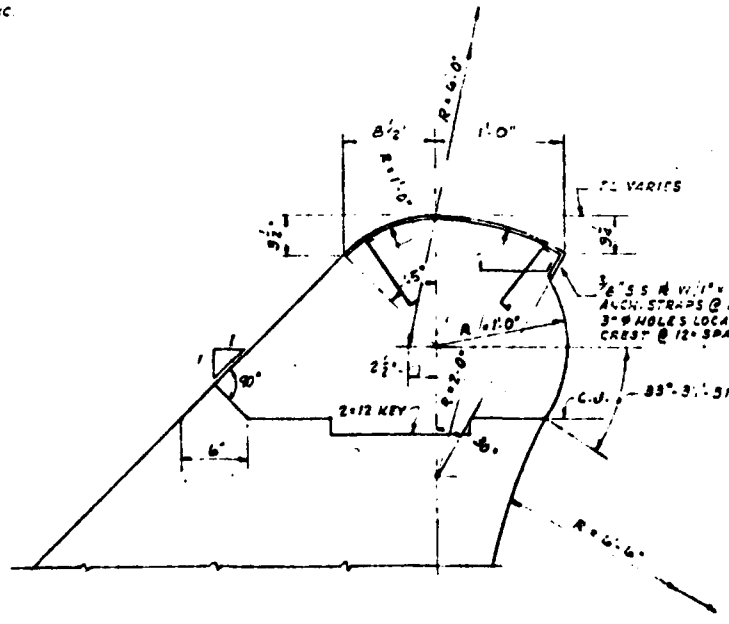
DETAIL (B/7)
SCALE: 3" = 1'-0"
(TYP. STOP LOG SLOT DETAIL)

2

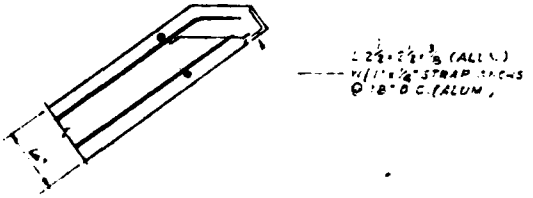
SHEET NO. 7 OF 22



SECTION (22/6)
SCALE : 1/4" = 1'-0"



DETAIL (C/7)
SCALE : 1½" = 1'-0"
(TYP. CREST DETAIL)



DETAIL (D/7)
SCALE : 1½" = 1'-0"

PROPOSED FLOOD CONTROL CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMANS POND
WEYMOUTH

WHITMANS POND–SECTIONS I

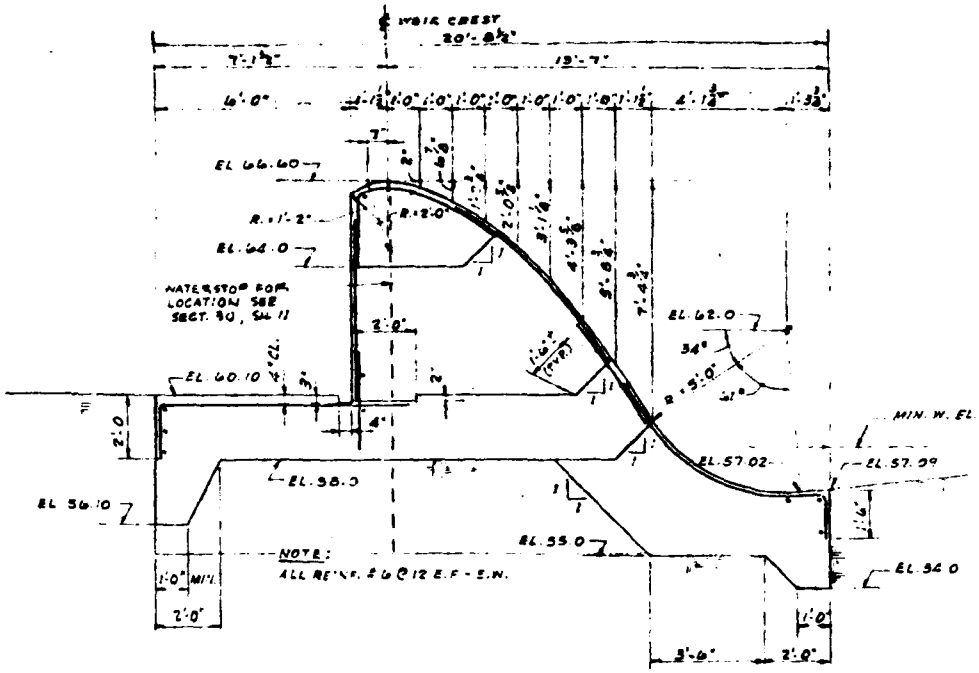
DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS

METCALF & EDDY, INC. | ENGINEERS
BOSTON · NEW YORK · PALO ALTO

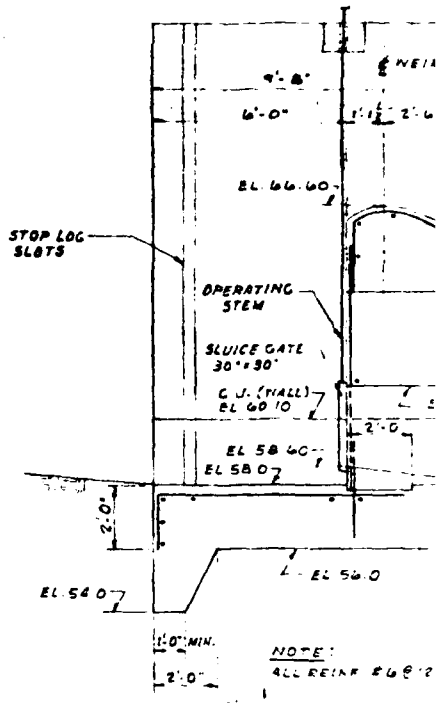
OCTOBER, 1969	DESIGNED BY JJ
	TRACED BY N.H.G.
C.E.W. REVIEW BY JCJ DATE 10/69	APPROVED BY K.F.A.

CONTRACT NO. 2664 | ACC. NO. 04762-G

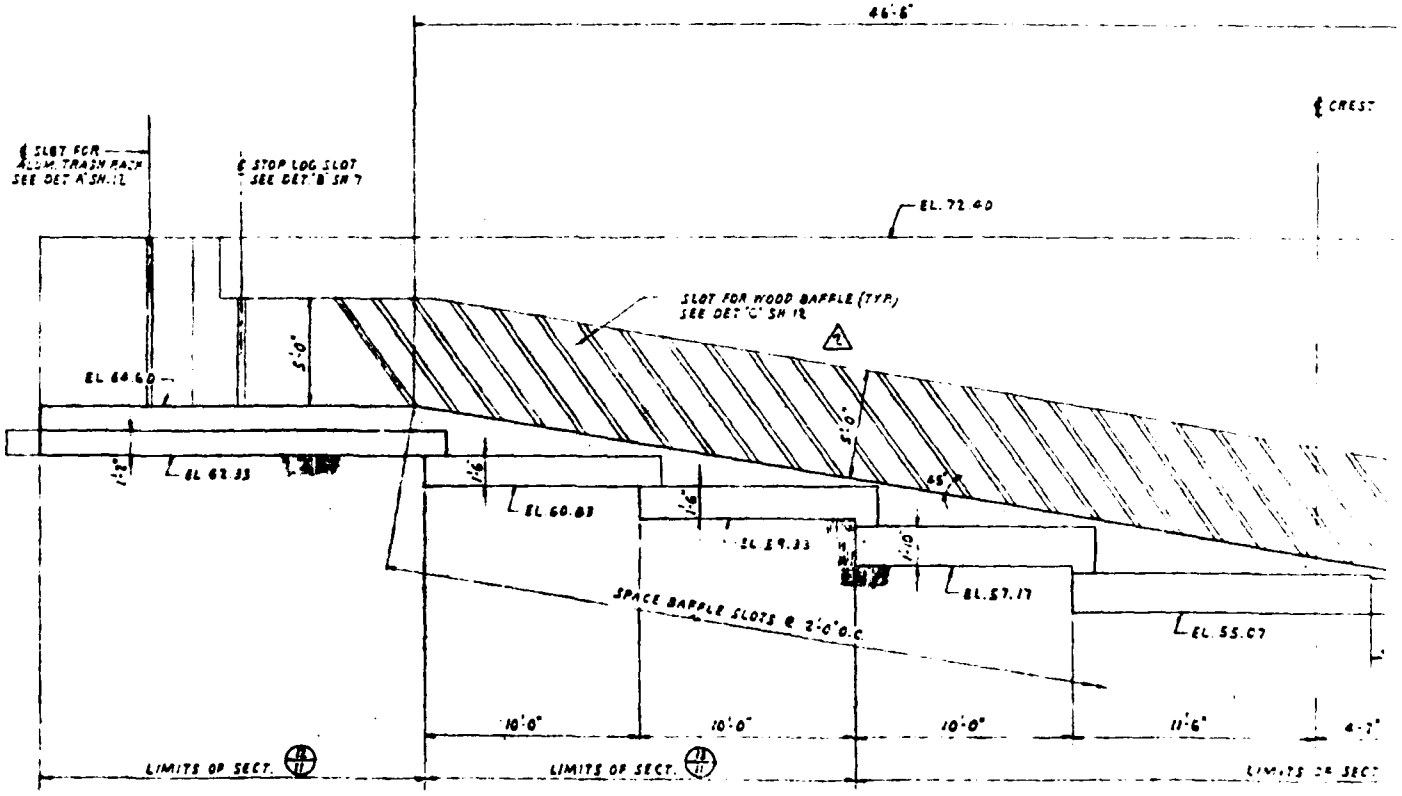
2464-B



SECTION (1/6)
SCALE: 3/8" = 1'-0"

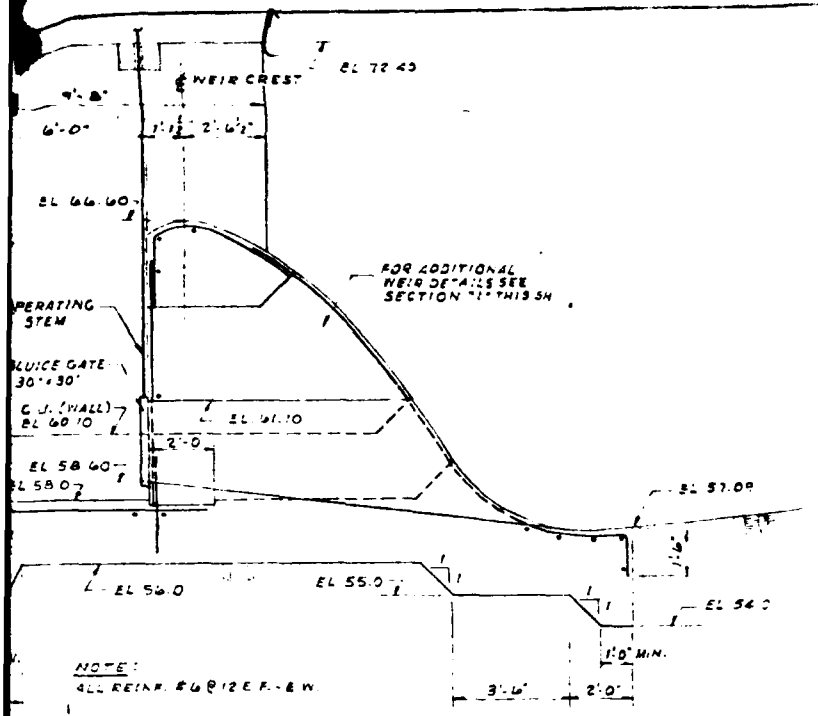


SEC
SCALE:

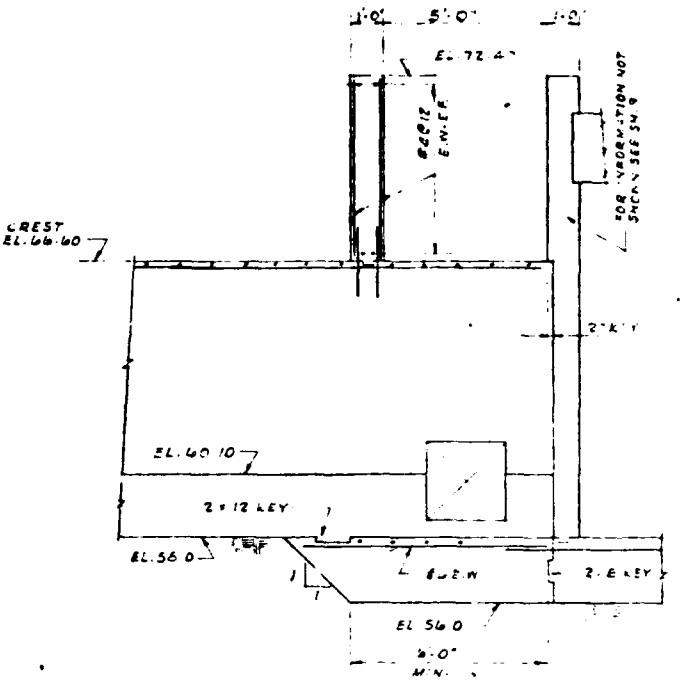


NOTE: FOR DETAILS OF TRASH & WOOD BAFFLES SEE

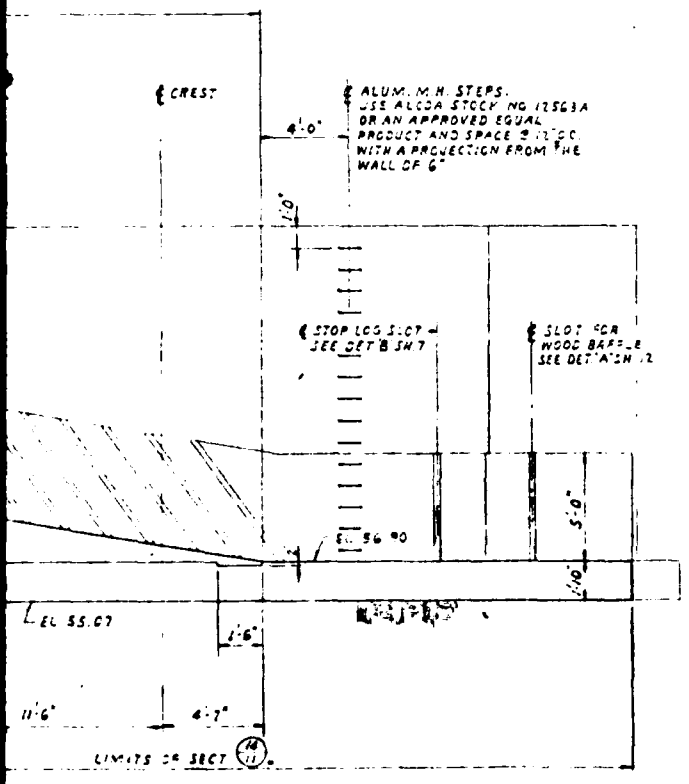
SECTION (2/6)
SCALE: 1/4" = 1'-0"



SECTION 3/6
SCALE: 3/8" = 1'-0"



SECTION 5/6-8
SCALE: 3/8" = 1'-0"



NOTE: FOR DETAILS OF TRASH RACK & WOOD BAFFLES SEE SH 12

REVISION	MADE BY	CHECKED BY	DESCRIPTION
7-2-70	W.R.S.	H.P.T.	CHANGE WOOD BAFFLE TO DET. C
4-29-70	D.J.T.	R.W.D.	ADDED SECT 3, REV SECT 5

PROPOSED FLOOD CONTROL
CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMANS POND
WEYMOUTH

WHITMANS POND - SECTIONS II

DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS

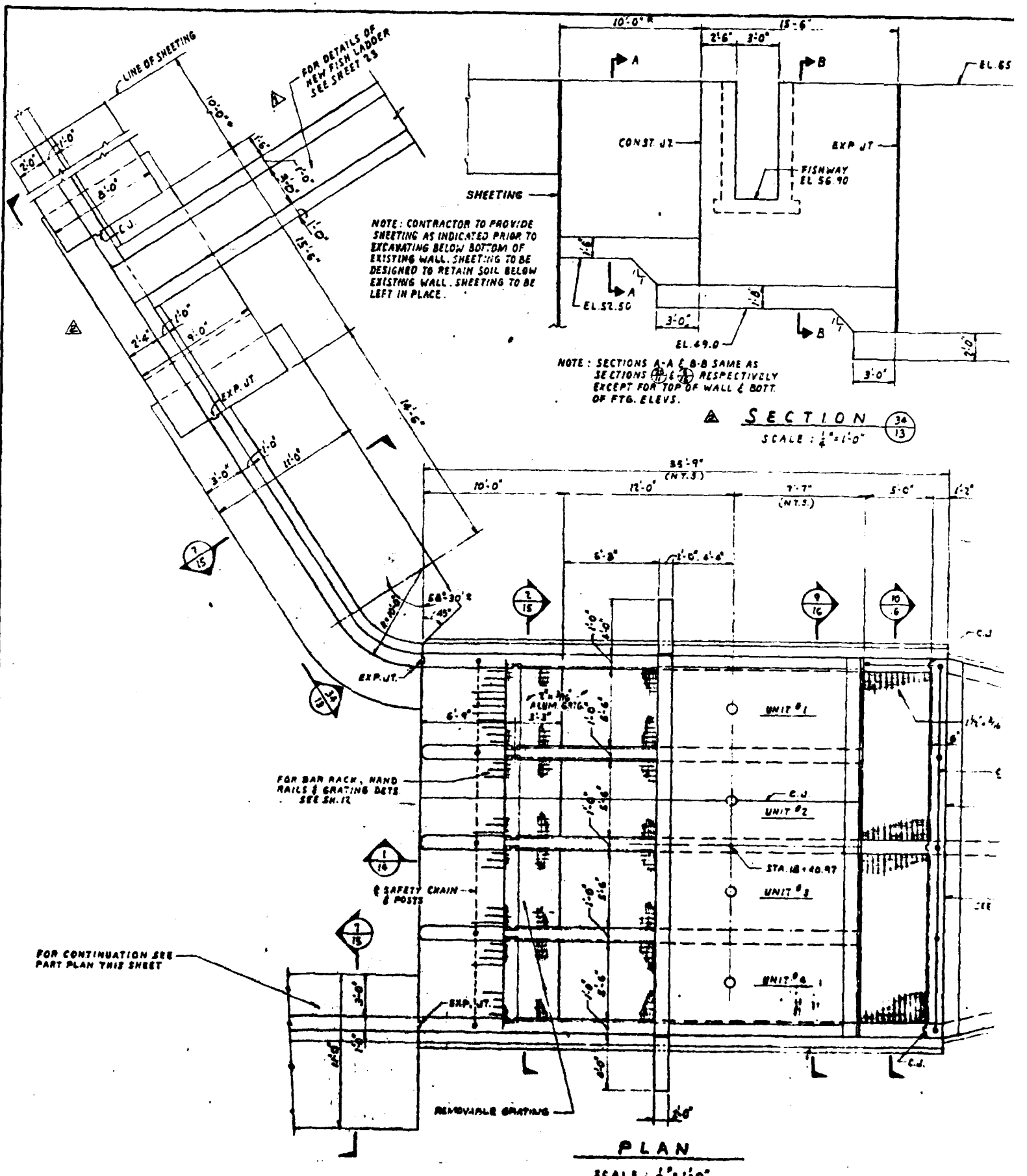
METCALF & EDDY, INC. | ENGINEERS
BOSTON SAN JOSE PALO ALTO

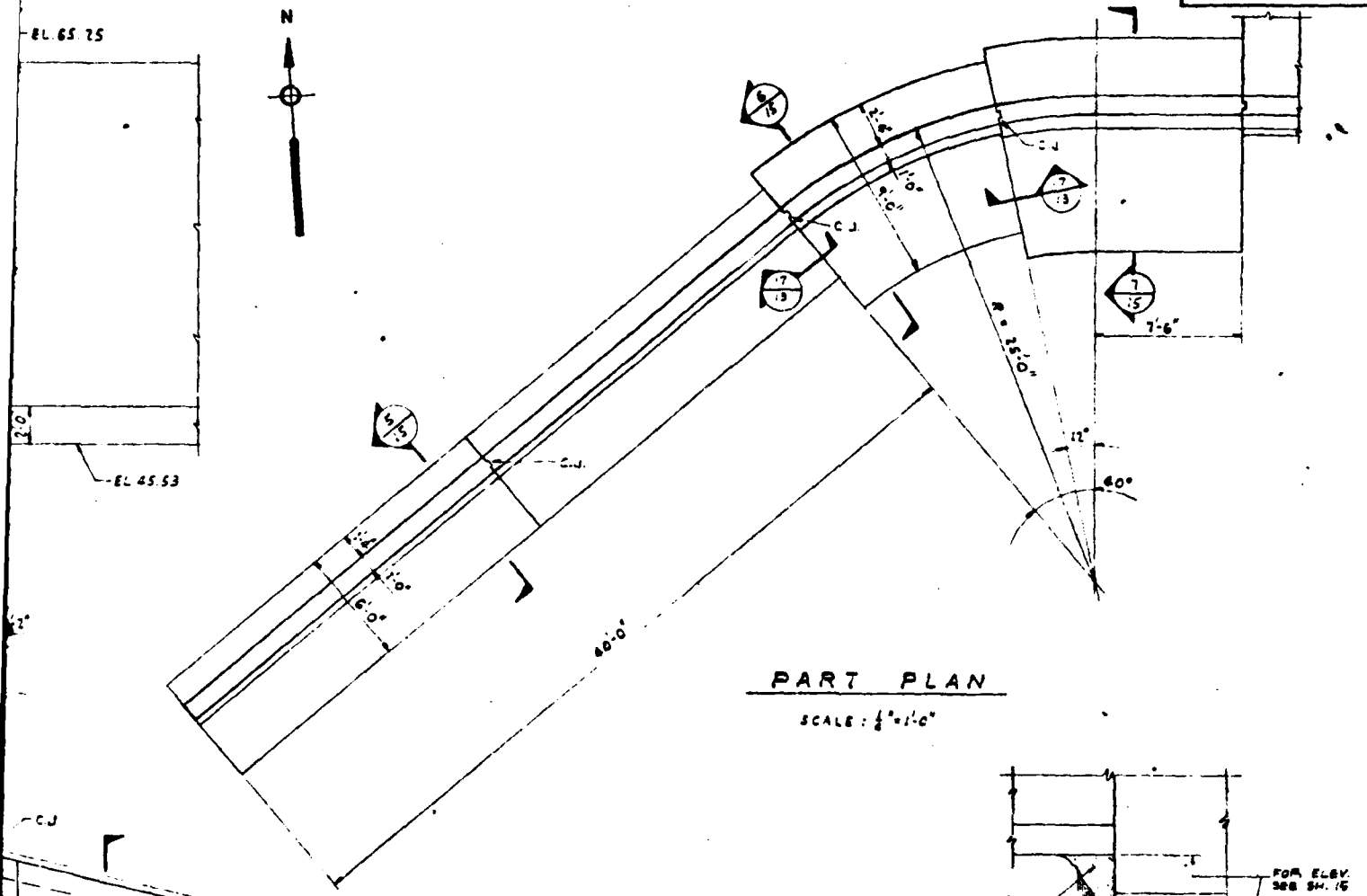
OCTOBER, 1969	DESIGNED BY C.V.
D.P.W. REVIEW BY ____ DATE ____	TRACED BY J.T.S.
	APPROVED BY W.F.D.

CONTRACT NO. 2664 | ACC. NO. 04762-H

4-69261-1

2484-13


LINE OF SHEETING
FOR DETAILS OF NEW FISH LADDER SEE SHEET 23
10'-0" R
15'-6"
2'-6"
3'-0"
A
B
EL. 65
CONST. JT.
EXP. JT.
FISHWAY EL 56.90
SHEETING
NOTE: CONTRACTOR TO PROVIDE SHEETING AS INDICATED PRIOR TO EXCAVATING BELOW BOTTOM OF EXISTING WALL. SHEETING TO BE DESIGNED TO RETAIN SOIL BELOW EXISTING WALL. SHEETING TO BE LEFT IN PLACE.
EL. 52.50
EL. 49.0
NOTE: SECTIONS A-A & B-B SAME AS SECTIONS 11/16 & 12/16 RESPECTIVELY EXCEPT FOR TOP OF WALL & BOTT. OF FTG. ELEVS.
SECTION
SCALE: 1/4"=1'-0"
35'-9" (N.T.S.)
10'-0"
12'-0"
7'-7" (N.T.S.)
5'-0"
1'-2"
5'-8"
2'-0"
6'-6"
58°-30'±
45°
EXP. JT.
C.J.
UNIT #1
UNIT #2
UNIT #3
UNIT #4
STA. 18+40.97
FOR BAR RACK, HAND RAILS & GRATING DETS SEE SH. 12
SAFETY CHAIN & POSTS
FOR CONTINUATION SEE PART PLAN THIS SHEET
REMOVABLE GRATING
PLAN
SCALE: 1/4"=1'-0"

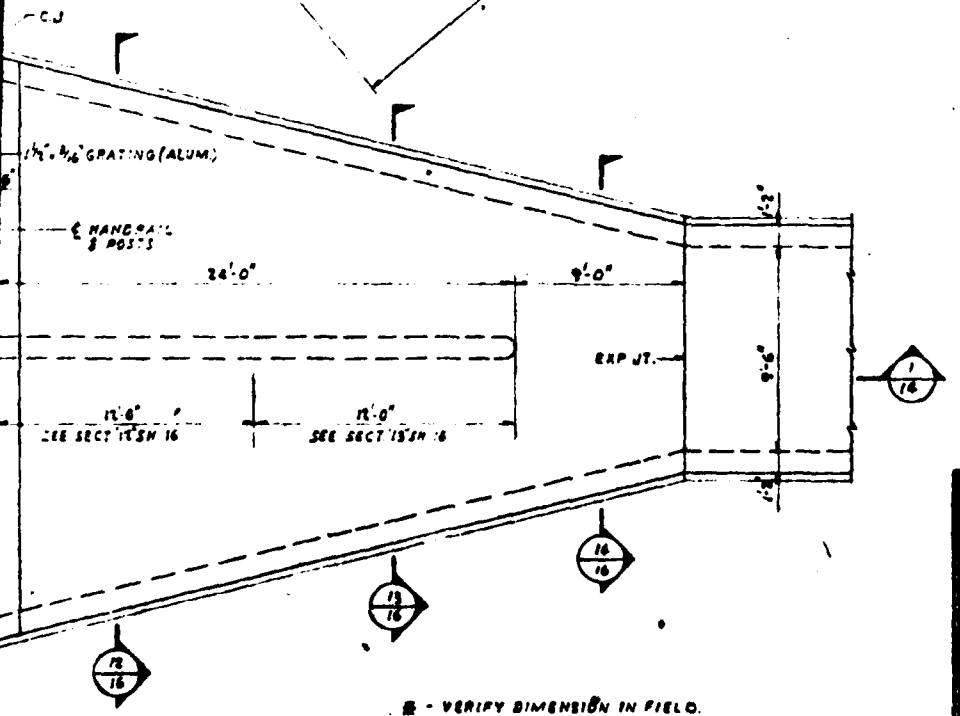


PART PLAN

SCALE : $\frac{1}{8}$"=1'-0"

SECTION (7/5)

NO SCALE



E - VERIFY DIMENSION IN FIELD.

REVISION	MADE BY	CHECKED BY	DESCRIPTION
10-1-70	D.J.T.	HPT	ADDED RETAINING WALL
9-9-70	W.H.G.	HPT	ADDED FISHWAY

PROPOSED FLOOD CONTROL
CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMANS POND
WEYMOUTH

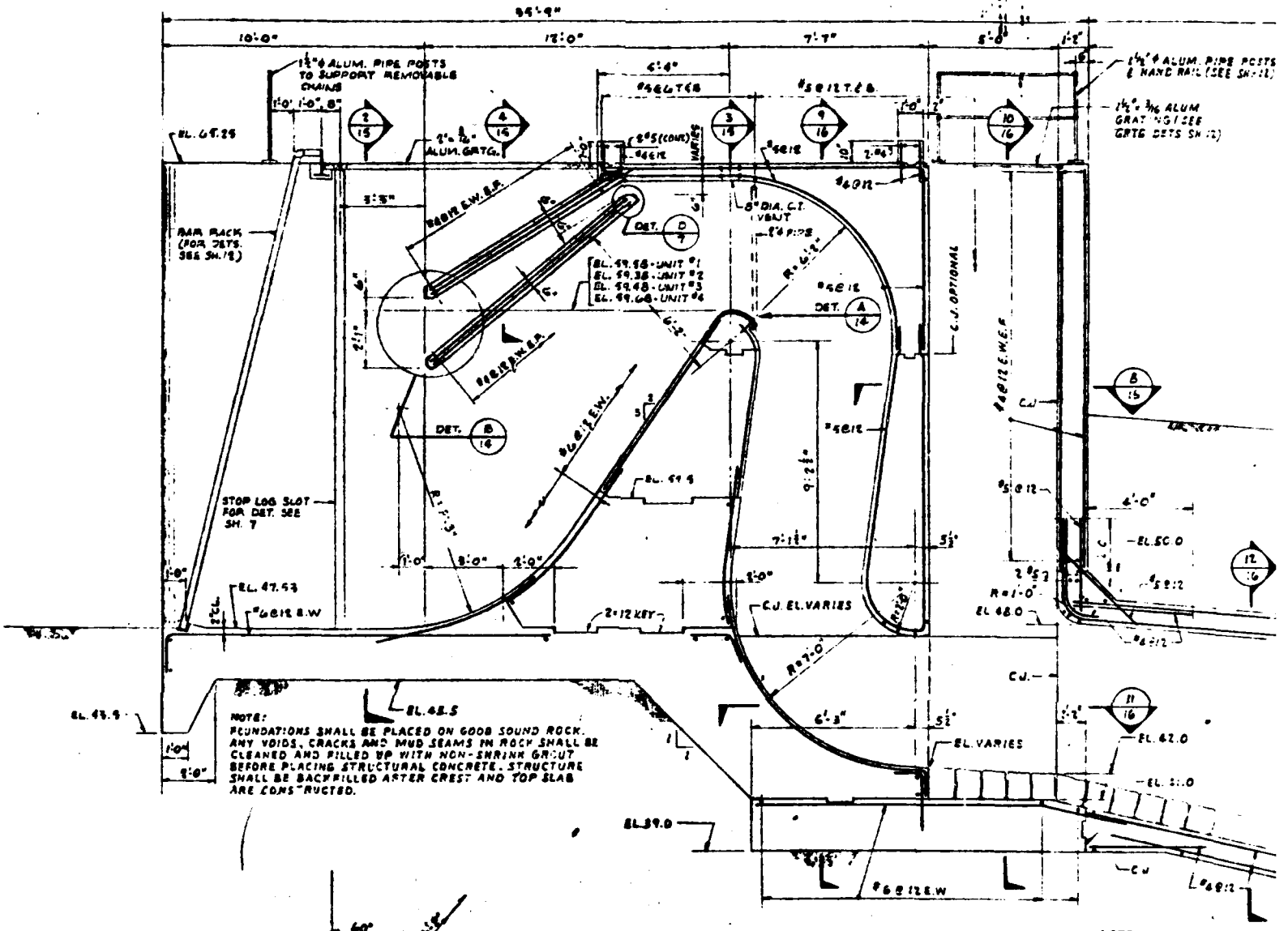
IRON HILL DAM - PLAN

DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS

METCALF & EDDY, INC. | ENGINEERS
BOSTON · PALO ALTO

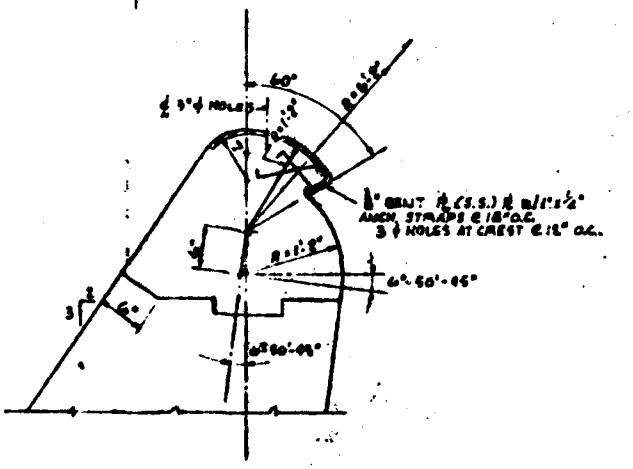
OCTOBER, 1969	DESIGNED BY JV
D.P.W. REVIEW	TRACED BY D.J.T.
BY ____ DATE ____	APPROVED BY [illegible]

CONTRACT NO. 2664 | ACC. NO. 04762-M



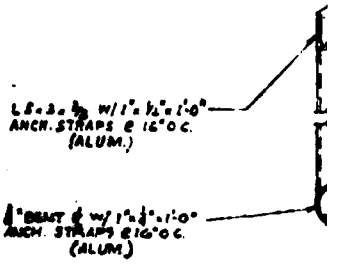
SECTION (1/13)

SCALE : ¾" = 1'-0"



DETAIL (A/14)

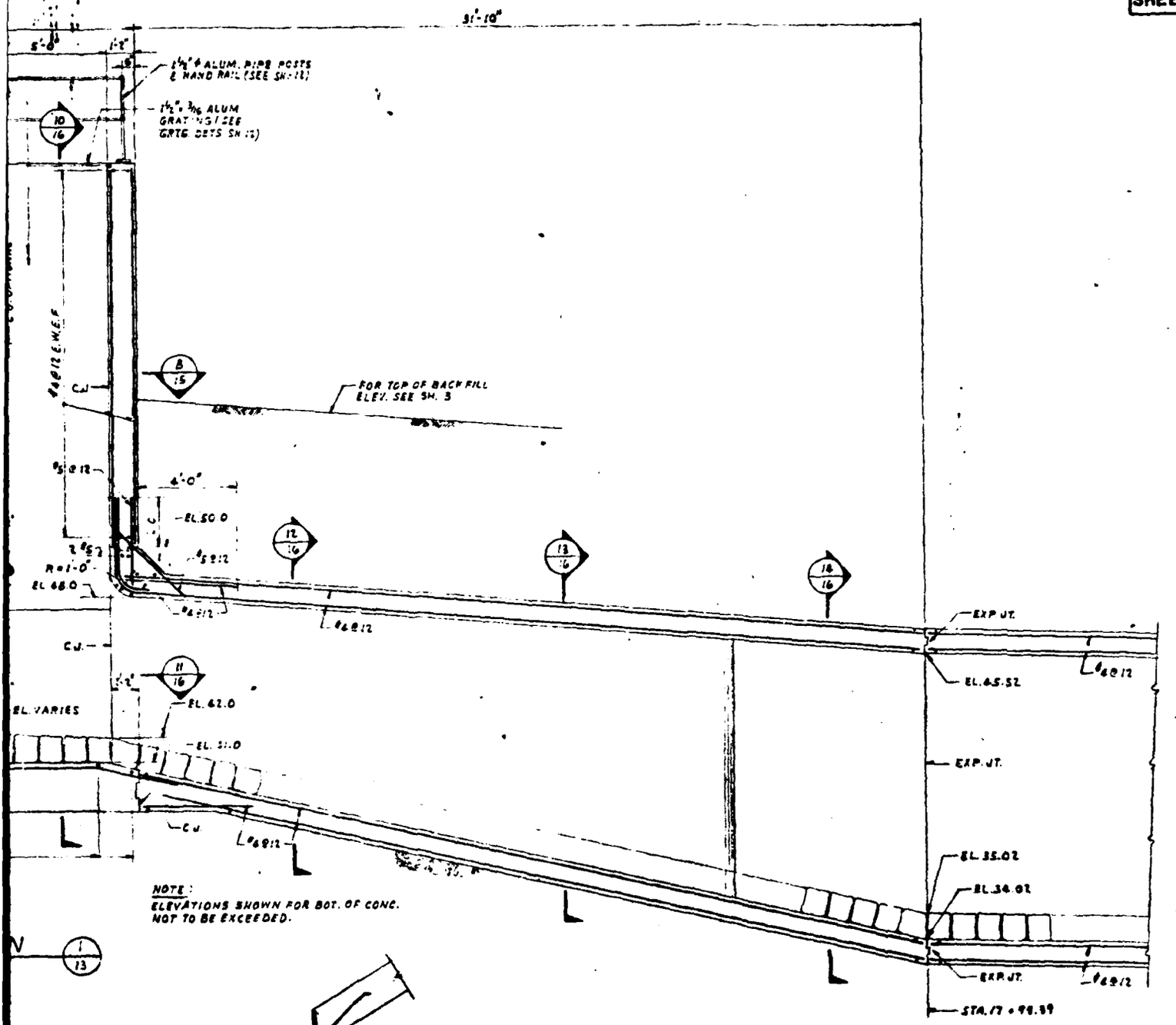
SCALE : 1"=1'-0"



DETA

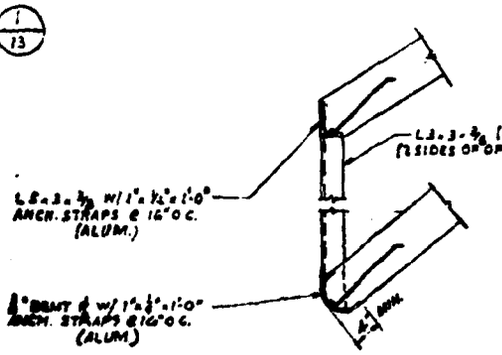
SCALE : 1"=1'

SHEET NO.



NOTE:
ELEVATIONS SHOWN FOR BOT. OF CONC. NOT TO BE EXCEEDED.

N 1/13



DETAIL 8/16

SCALE : 1" = 1'-0"

PROPOSED FLOOD CONTROL CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMAN
WEYMOUTH

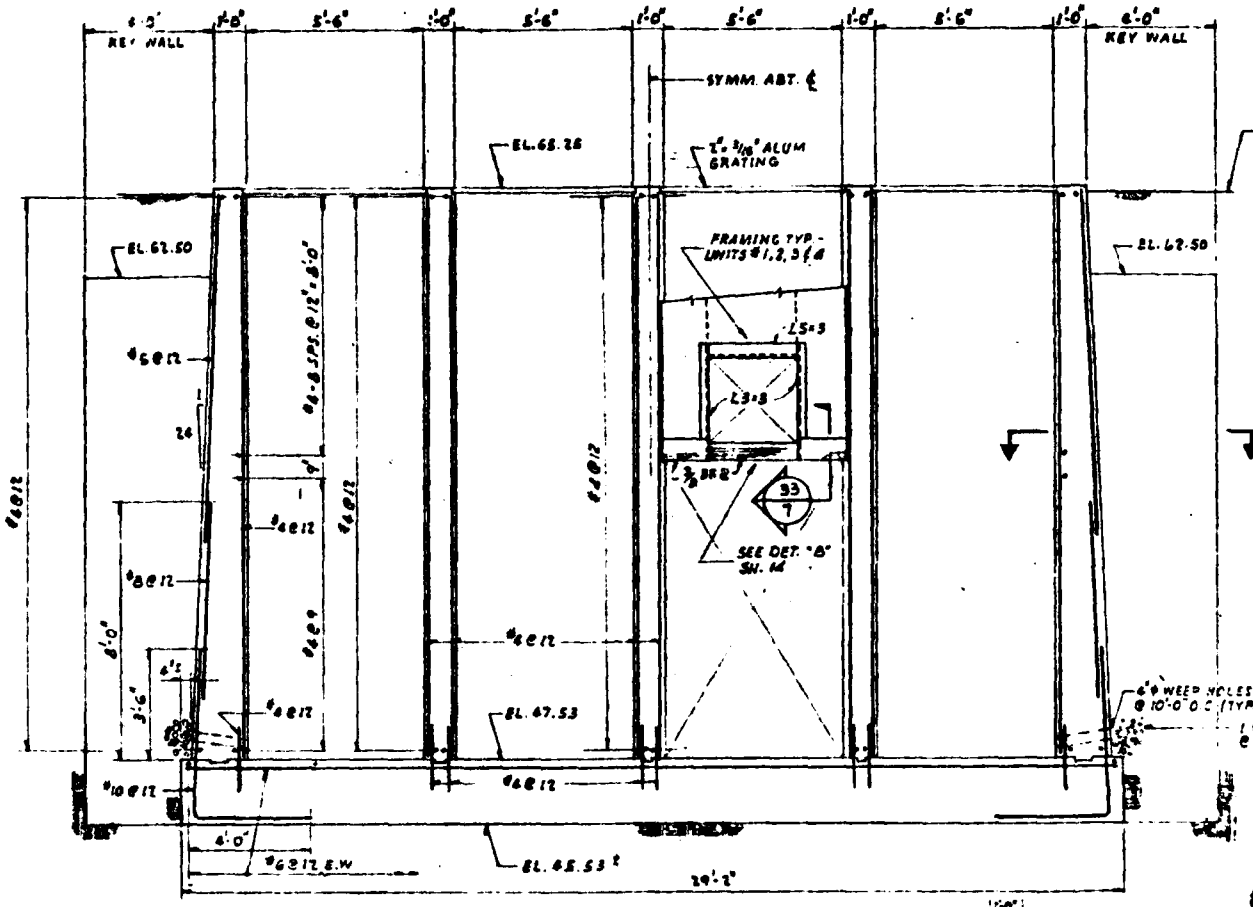
IRON HILL DAM - SECTIONS

DEPARTMENT OF PUBLIC WORKS OF MASS.
DIVISION OF WATERWAYS

METCALF & EDDY, INC. | ENGINEERS
BOSTON · SAN JOSE · PALO ALTO

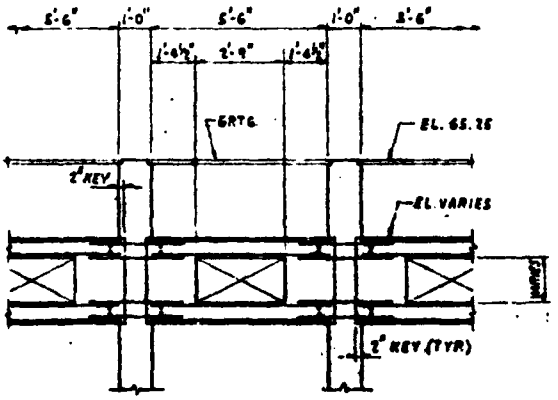
OCTOBER, 1969	DESIGNED BY
REVISED	TRACED BY R.J.T.
BY DATE	APPROVED BY

CONTRACT NO. 2664 | ACC. NO. 0



SECTION (2 / 13, 14)

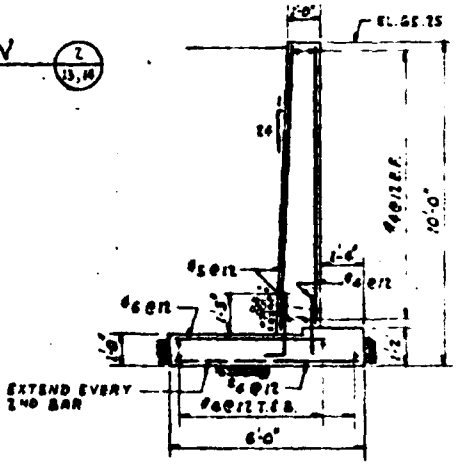
SCALE : 1/8" = 1'-0"



NOTE : ALL REINF. #4 @ 12 T. & B. E.W.

SECTION (4 / 14)

SCALE : 1/8" = 1'-0"



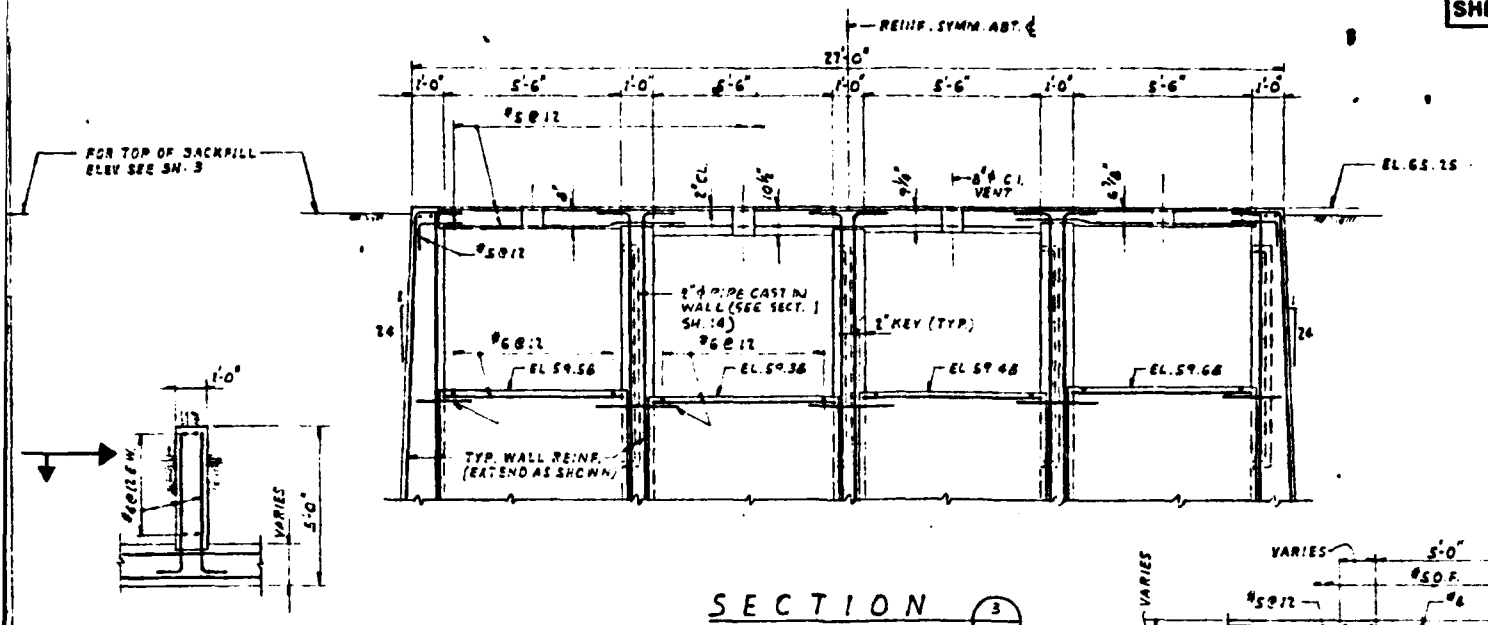
SECTION (5 / 13)

SCALE : 1/8" = 1'-0"

SECT

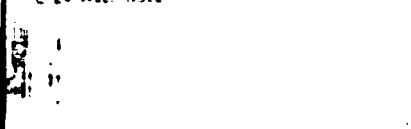
SCALE : 1/8"

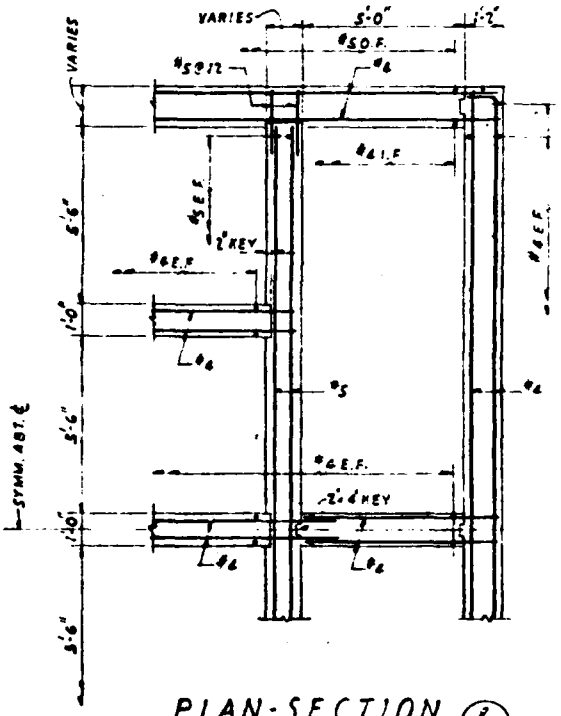
SHEET NO. 15 C



SECTION (3/14)

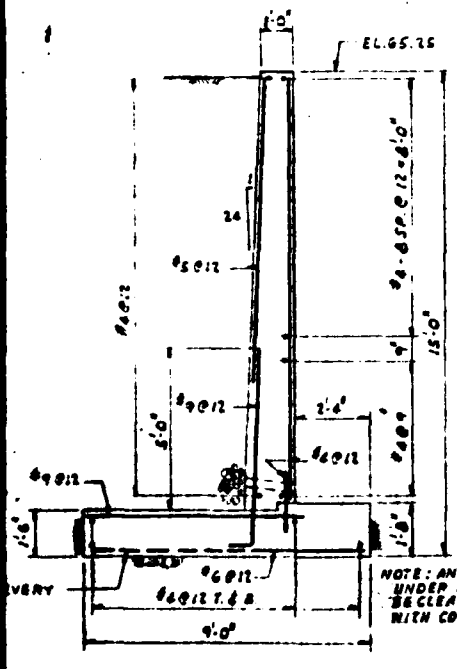
SCALE : ⅜"=1'-0"





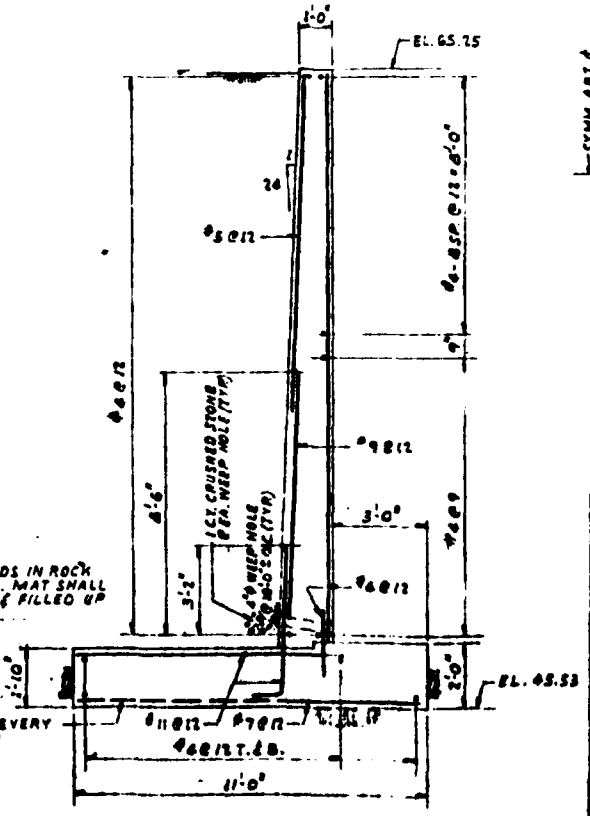
PLAN-SECTION (8/14)

SCALE : ⅜"=1'-0"



SECTION (6/13)

SCALE : ⅜"=1'-0"



EXTEND EVERY 2ND BAR

SECTION (7/13)

SCALE : ⅜"=1'-0"

PROPOSED FLOOD CONTROL CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMANS PO
WEYMOUTH

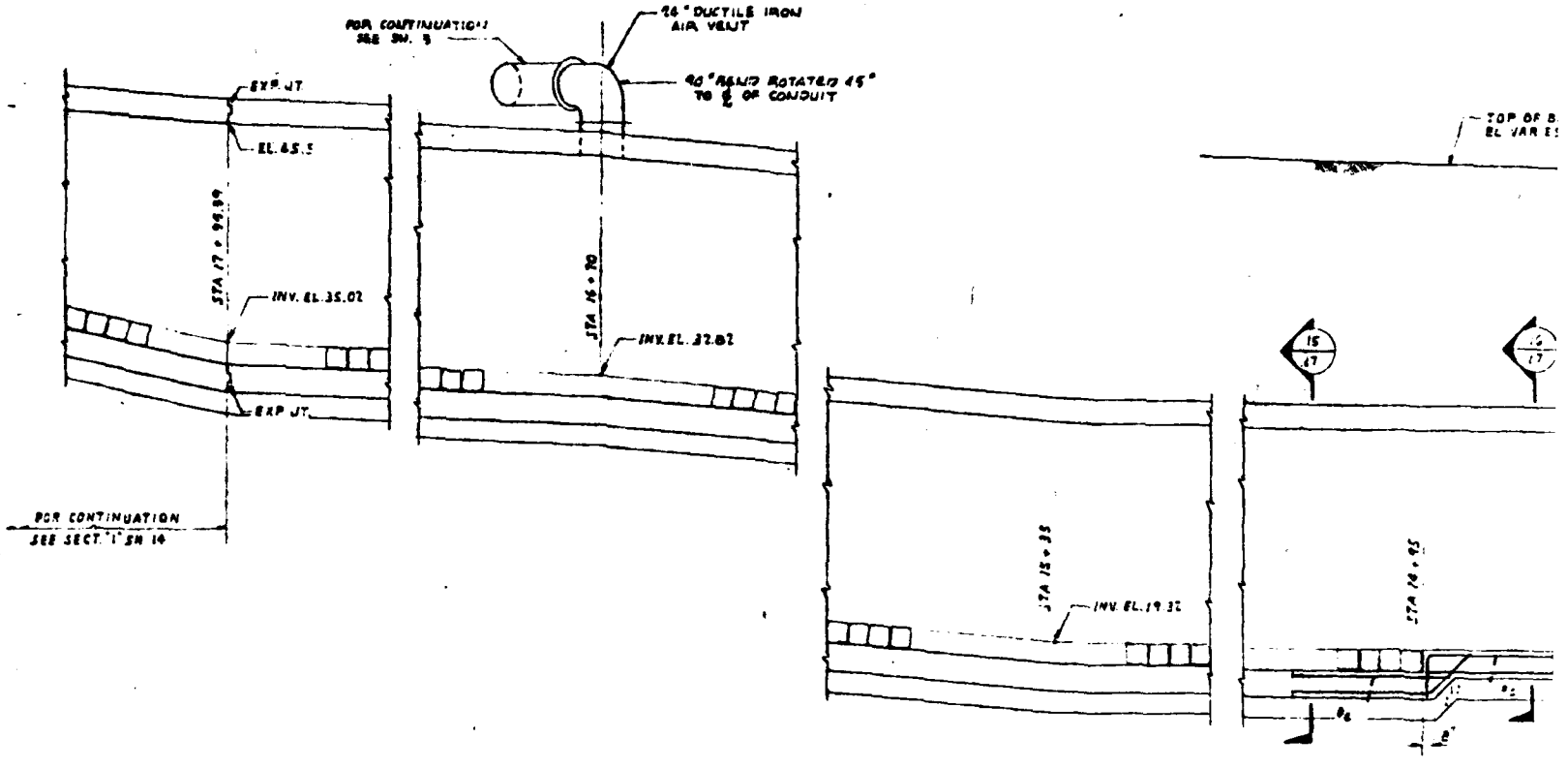
IRON HILL DAM-SECTIONS II

DEPARTMENT OF PUBLIC WORKS OF MASSACHUS
DIVISION OF WATERWAYS

METCALF & EDDY, INC. | ENGINEERS
BOSTON · SAN JOSE · PALO ALTO

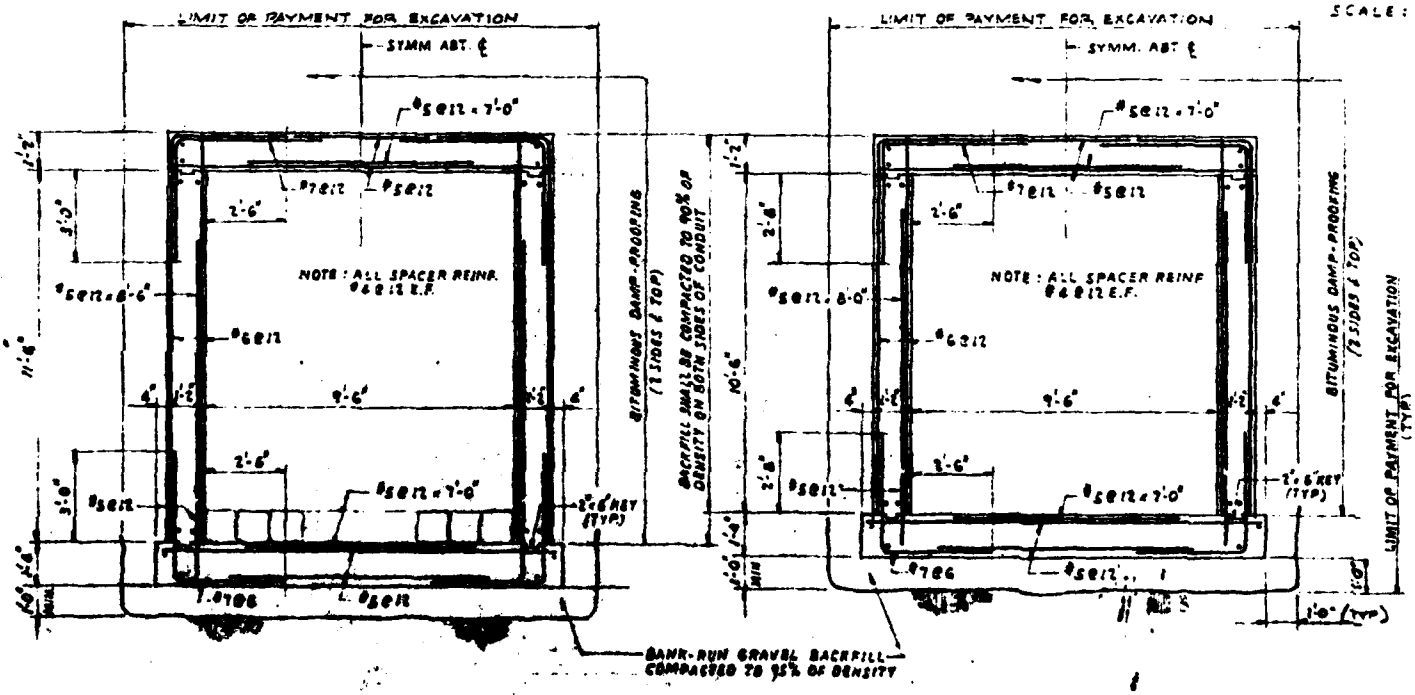
OCTOBER, 1969	DESIGNED BY
	TRACED BY
BY ___ DATE ___	APPROVED BY

CONTRACT NO. 2664 | ACC. NO. 0476



PART LONGITUDINAL SECTION

SCALE : 1/4" = 1'-0"



SECTION 16/17

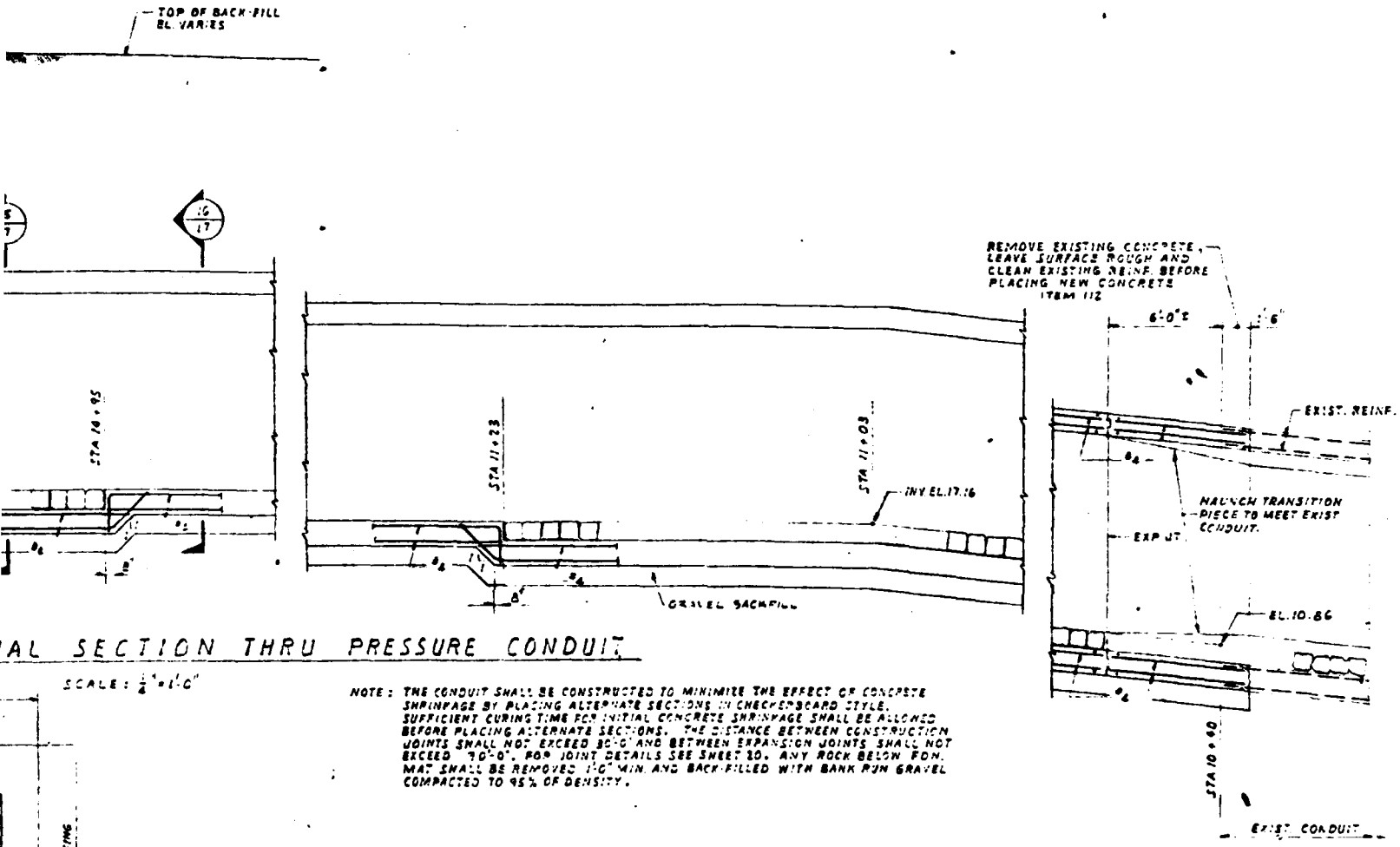
SCALE : 1/4" = 1'-0"

SECTION 16/17

SCALE : 1/4" = 1'-0"

1 2

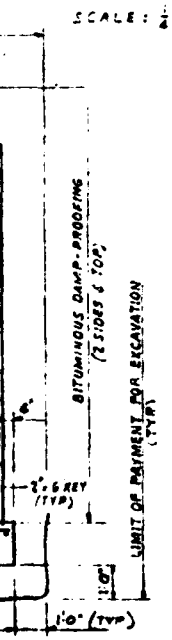
SHEET NO. 17 OF 22



AL SECTION THRU PRESSURE CONDUIT

SCALE: 1/4"=1'-0"

NOTE: THE CONDUIT SHALL BE CONSTRUCTED TO MINIMIZE THE EFFECT OF CONCRETE SHRINKAGE BY PLACING ALTERNATE SECTIONS IN CHECKERBOARD STYLE. SUFFICIENT CURING TIME FOR INITIAL CONCRETE SHRINKAGE SHALL BE ALLOWED BEFORE PLACING ALTERNATE SECTIONS. THE DISTANCE BETWEEN CONSTRUCTION JOINTS SHALL NOT EXCEED 30'-0" AND BETWEEN EXPANSION JOINTS SHALL NOT EXCEED 70'-0". FOR JOINT DETAILS SEE SHEET 20. ANY ROCK BELOW FDN. MAT SHALL BE REMOVED 1'-0" MIN. AND BACK-FILLED WITH BANK RUN GRAVEL COMPACTED TO 95% OF DENSITY.



PROPOSED FLOOD CONTROL CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMANS POND
WEYMOUTH

IRON HILL DAM - CONDUIT SECTIONS

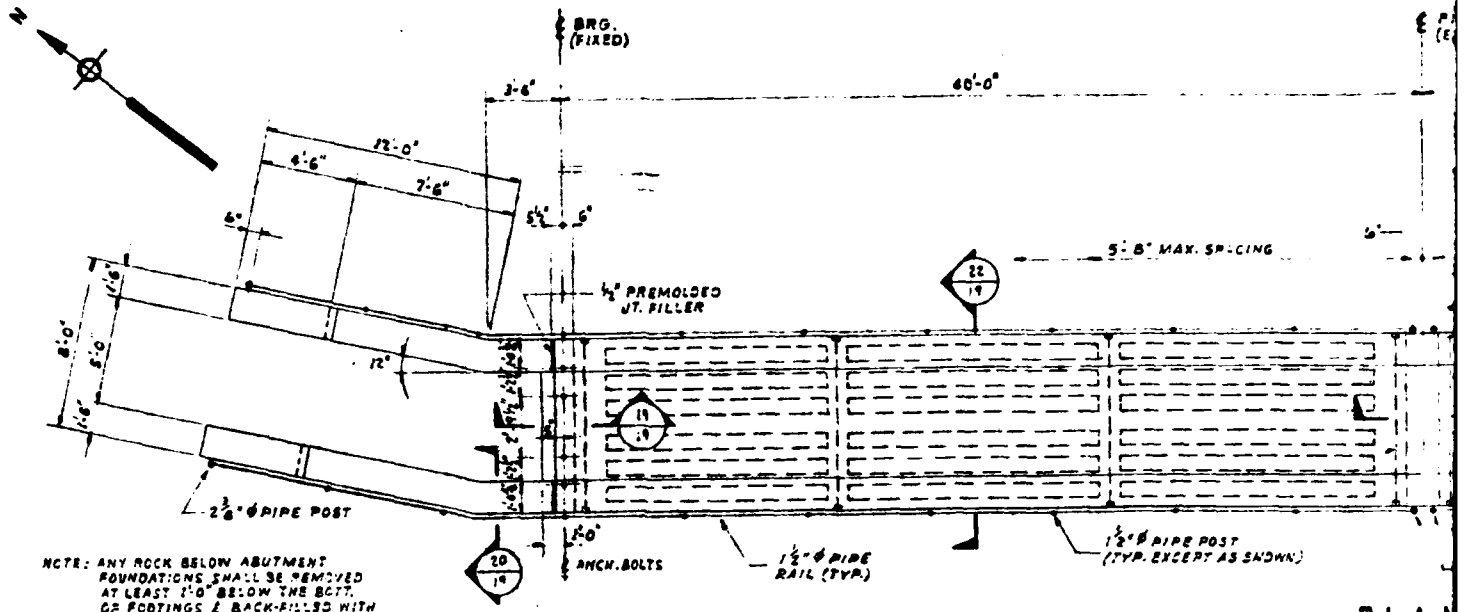
DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS

METCALF & EDDY, INC. | ENGINEERS
BOSTON · SAN JOSE · PALO ALTO

OCTOBER, 1969	DESIGNED BY ____
U.S. REVIEW BY VCL DATE 10/69	TRACED BY RJT
	APPROVED BY VFP

CONTRACT NO. 2664 | **ACC. NO. 04762-**

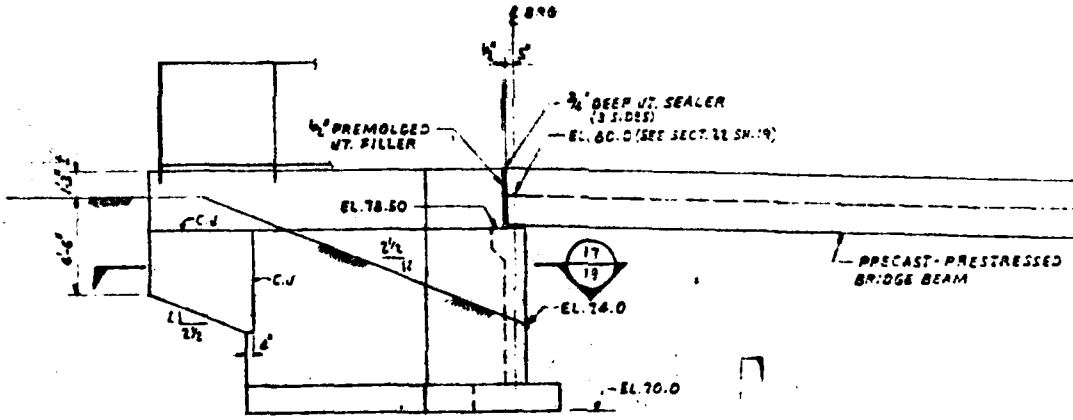
2484-B



NOTE: ANY ROCK BELOW ABUTMENT FOUNDATIONS SHALL BE REMOVED AT LEAST 1'-0" BELOW THE BOTT. OF FOOTINGS & BACK-FILLED WITH BANK RUN GRAVEL COMPACTED TO 95% OR DENSITY.

PLA

SCALE:



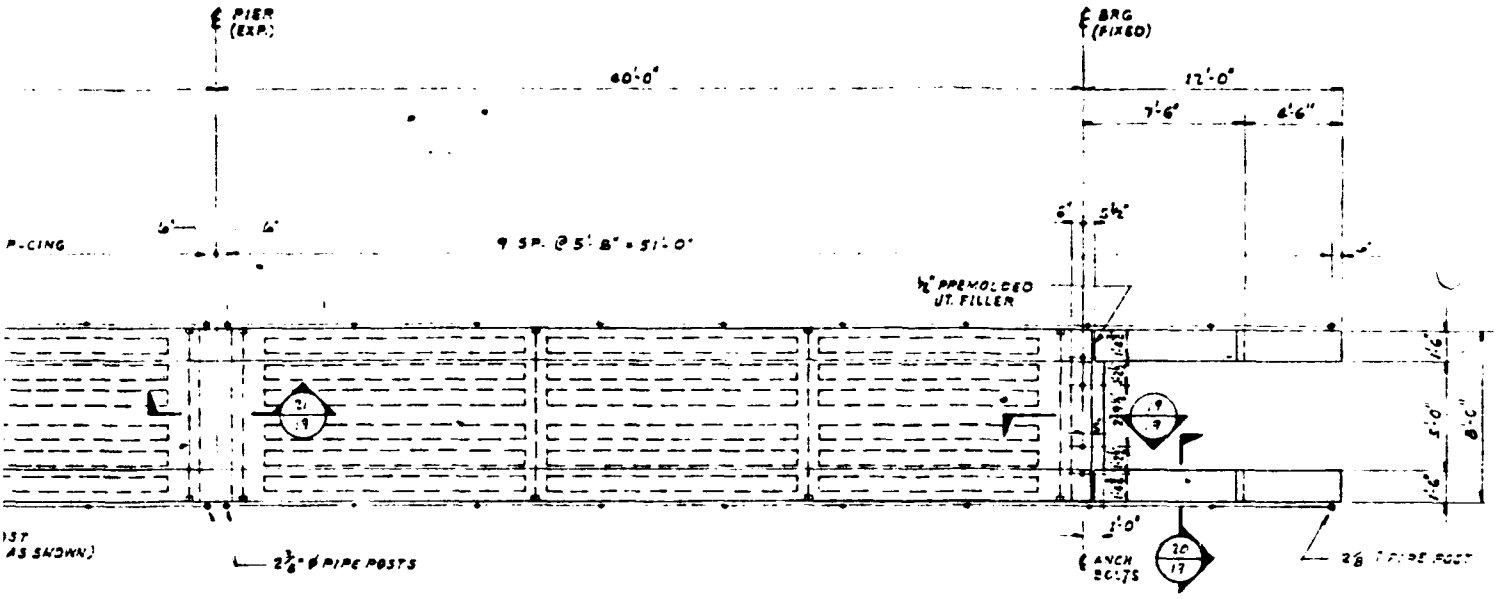
EL. 56.0

EL. 56.0

ELEVAT

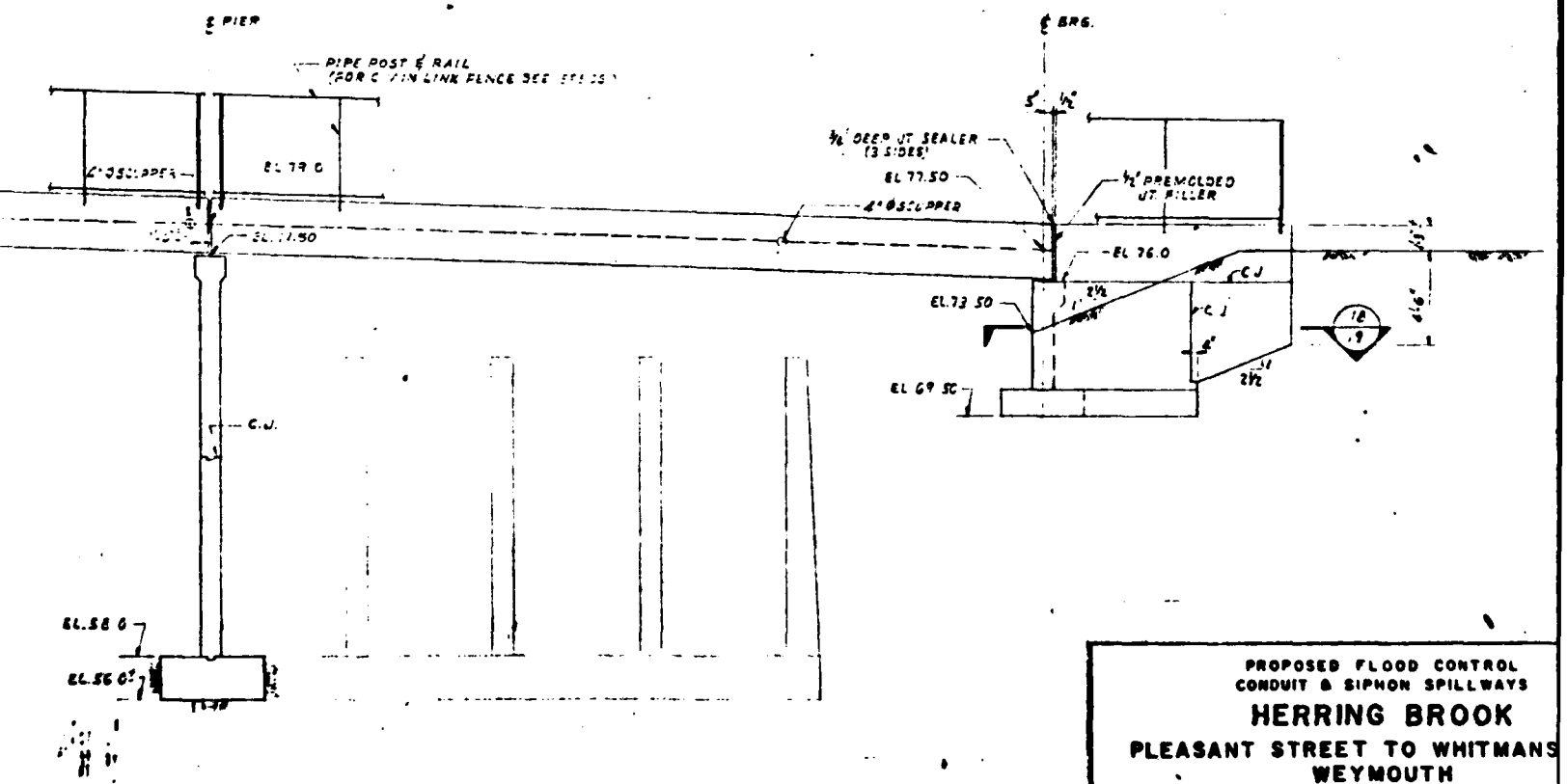
SCALE:

SHEET NO



PLAN

SCALE: 1/8" = 1'-0"



ELEVATION

SCALE: 1/8" = 1'-0"

PROPOSED FLOOD CONTROL CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMANS
WEYMOUTH

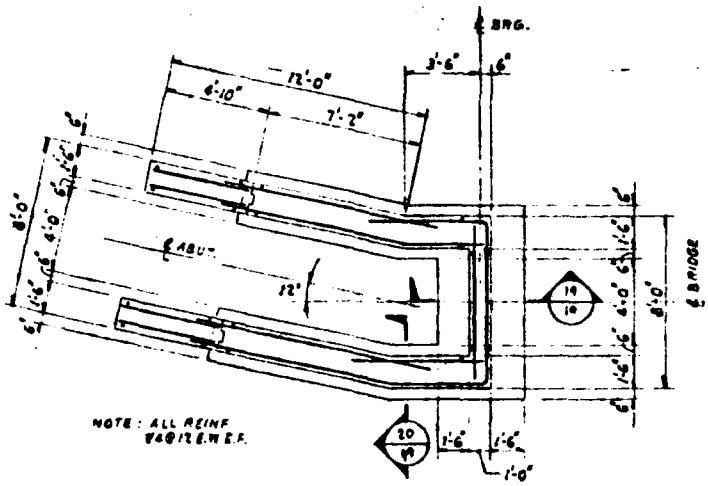
WHITMANS POND - BRIDGE PLAN & E

DEPARTMENT OF PUBLIC WORKS OF MASSA
DIVISION OF WATERWAYS

METCALF & EDDY, INC. | ENGINEERS
BOSTON · SAN DIEGO · PALO ALTO

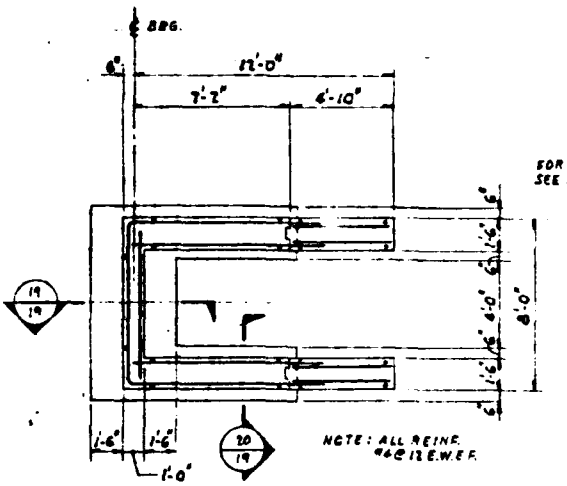
OCTOBER, 1969	DESIGNED BY ____
D.P.W. REVIEW BY ____ DATE 11/69	TRACED BY ____ APPROVED BY ____

CONTRACT NO 2664 | ACC. NO. 04



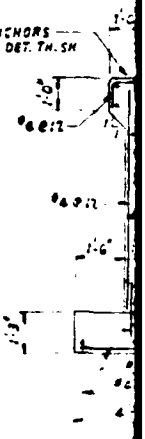
PLAN - SECTION (17/18)

SCALE : $\frac{1}{8}$" = 1'-0"



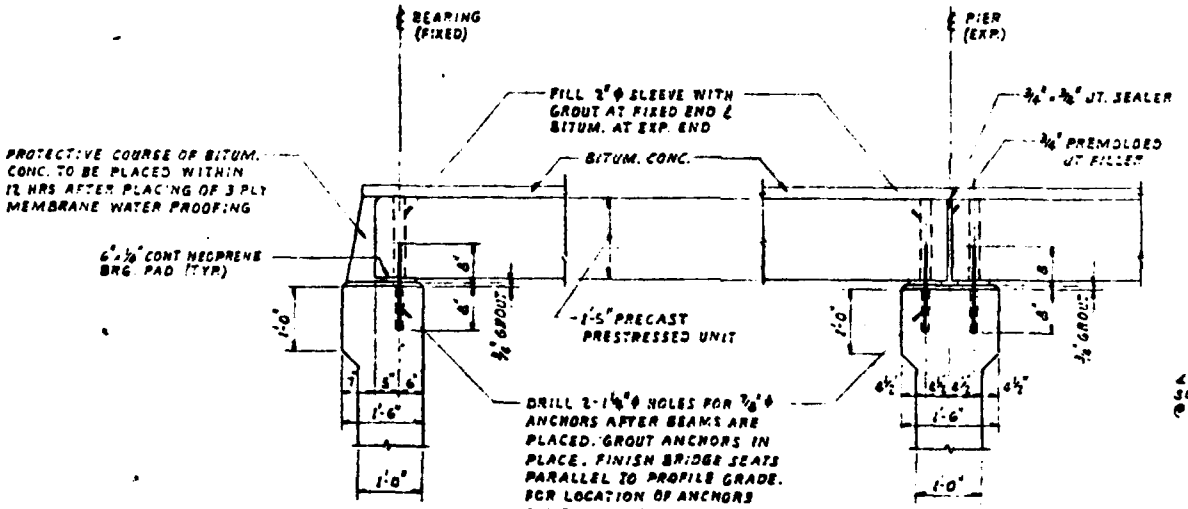
PLAN - SECTION (18/18)

SCALE : $\frac{1}{8}$" = 1'-0"



SECTIO

SCALE : $\frac{1}{8}$"

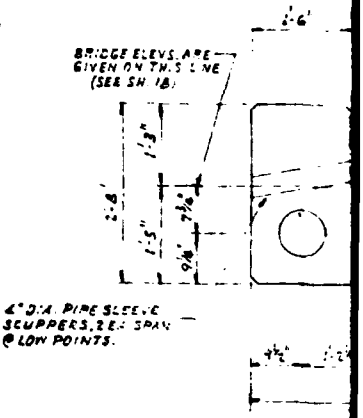


BEARING DETAIL AT ABUTMENT

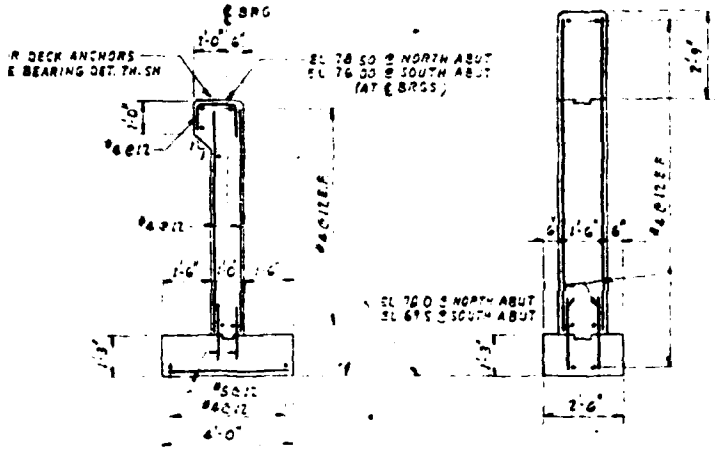
SCALE : $\frac{3}{4}$" = 1'-0"

BEARING DETAIL AT PIER

SCALE : $\frac{3}{4}$" = 1'-0"

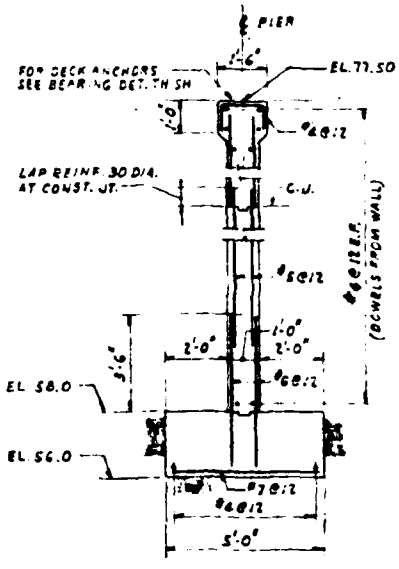


SHEET N

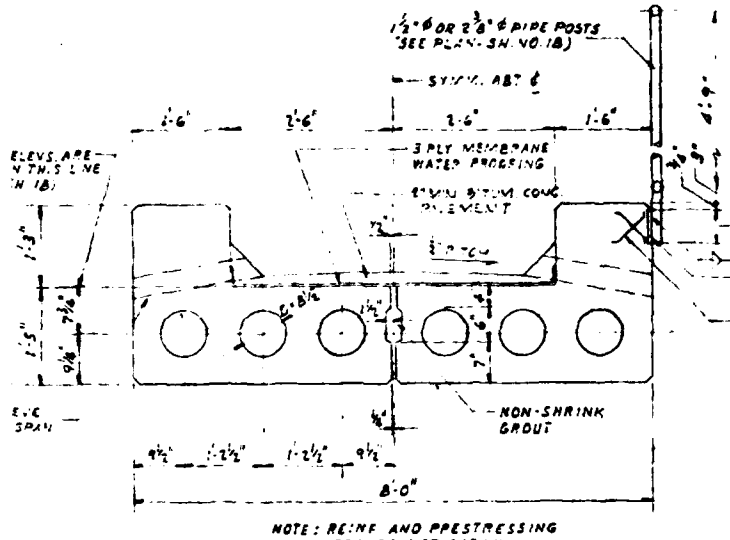


SECTION (9/19)
SCALE: 3/8"=1'-0"

SECTION (20/19)
SCALE: 3/8"=1'-0"



SECTION (21/18)
SCALE: 3/8"=1'-0"



NOTE: REINF. AND PRESTRESSING STRANDS NOT SHOWN.

SECTION (22/18)
SCALE: 3/8"=1'-0"

NOTES FOR PRESTRESSED CONCRETE BEAMS

1. SPECIFICATIONS: "AASHO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, "CURRENT EDITION: "CRITERIA FOR PRESTRESSED CONCRETE BRIDGES, U.S. BUREAU OF PUBLIC ROADS". ACI STANDARD BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-63), 1963 EDITION: AND ANY SUBSEQUENT REVISIONS APPROVED BY THE COMMISSION ON BRIDGES AND STRUCTURES OF AASHO.
2. LIVE LOADS: A UNIFORMLY DISTRIBUTED LOAD OF 100 psf ON AN ENTIRE AREA.
3. SUBSTITUTION: SIMILAR BEAM SECTIONS WITH MINOR DIMENSIONAL VARIATIONS, MANUFACTURED WITH ESTABLISHED PLANT FACILITIES WHICH MEET STRUCTURAL AND GEOMETRICAL REQUIREMENTS OF THIS PROJECT, MAY BE SUBSTITUTED UPON SUBMISSION BY THE PRODUCER OF THE DATA NECESSARY TO SHOW COMPLIANCE WITH THE REQUIREMENTS OF THE JOB AND UPON APPROVAL OF THE SUBSTITUTION BY THE ENGINEER.
4. CONCRETE: 28-DAY STRENGTH OF CONCRETE, f'_c=6,000 psi AND STRENGTH OF CONCRETE AT THE TIME OF TRANSFER OF PRESTRESSING FORCE, f'_{ci}=4,000 psi.
5. PRESTRESSING REINFORCEMENT: MATERIALS FOR PRESTRESSING REINFORCEMENT SHALL BE ANY OF THE MATERIALS SPECIFIED BY THE GOVERNING SPECIFICATIONS.
6. END BLOCKS: SUFFICIENT MILD STEEL REINFORCEMENT SHALL BE PROVIDED IN END BLOCKS TO RESIST THE TENSILE FORCES DUE TO CONCENTRATED PRESTRESSING LOADS.
7. DIAPHRAGMS: DIAPHRAGMS CAST WITHIN THE BEAM SHALL BE LOCATED AT THE THIRD POINTS OF THE SPAN.
8. LATERAL TIES: LATERAL TIES SHALL BE PROVIDED THROUGH THE END AND BEAM ENDS AS REQUIRED: EACH TIE SHALL BE EQUIVALENT TO MILD STEEL BAR TENSIONED TO 12,000 POUNDS OR AN EQUAL FORCE BY LATERAL TENSIONING OF HIGH STRENGTH TENDONS. TENSION IN BARS TAKE PLACE AFTER NON-SHRINKING GROUT IN LONG TIE HAS HARDENED FOR AT LEAST 3 DAYS.
9. CHAMFERS AND CORNERS: ALL EXPOSED CORNERS SHALL BE CHAMFERED ¾" OR ROUNDED TO ¾" RADIUS.
10. FINISH: TOPS SHALL BE GIVEN A BROOM FINISH, NORMAL TO CENTER OF ROADWAY.
11. HANDLING: IN HANDLING, THE BEAMS MUST BE MAINTAINED IN AN UPRIGHT POSITION AT ALL TIMES AND MUST BE PICKED UP ONLY BY MEANS OF APPROVED DEVICES NEAR THE ENDS OF THE BEAMS.
12. SHOP DRAWINGS: SHOP DRAWINGS AND DESIGN COMPUTATIONS SHOWING DETAILS OF CONSTRUCTION AND ERECTION SHALL BE SUBMITTED TO THE ENGINEER IN QUADRUPLICATE FOR APPROVAL BEFORE FABRICATION.
13. WEIGHTS: WEIGHTS OF BEAMS SHALL BE PLAINLY PRINTED OR STENCILED ON EACH MEMBER.

PROPOSED FLOOD CONTROL
CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMANS PO
WEYMOUTH

WHITMANS POND - BRIDGE SECTIONS

DEPARTMENT OF PUBLIC WORKS OF MASSACHUS
DIVISION OF WATERWAYS

METCALF & EDDY, INC. | ENGINEERS
BOSTON PALO ALTO SAN JUAN

OCTOBER, 1969	DESIGNED BY
BY REVIEW	TRACED BY
BY DATE 10/69	APPROVED BY

CONTRACT NO. 2664 | ACC. NO. 0476

2454

BORING NO. B-1 GROUND ELEV. 73.4 DATE: 2-69

DEPTH	SAMPLER BLOWS FT.	CORE RATE min./ft.	SOIL IDENTIFICATION	SAMPLE NO.
0			2' OF FROST	
	13			1 2'-3'6" REC 12"
5	17		BROWN FINE TO COARSE SAND, WOOD, GRAVEL, FILL	2 5'-6'6" REC 12"
			10' TO 11' CORED BOULDER	
13'-0"			TOP OF ROCK 13'-0"	
		7	PINK GRANITE	C-1 13'-17'
15		12 12	VERY HARD	REC 93"
		14 11	SEAMY	C-2 17'-20'
20'-0"		13 17		REC 33"
		10	GRAY GRANITE	C-3
		12 7	SOME TRAP ROCK VERY SEAMY	20'-25' REC 22"
25'-0"		8 7	HARD	

BOTTOM OF BORING 25'-0"

NOTES:

1. WATER LEVEL AT 6' AFTER 1 HOUR.
2. 1 3/8" ROCK CORE.

BORING NO. B-2 GROUND ELEV. 70.8 DATE: 2-69

DEPTH	SAMPLER BLOWS FT	CORE RATE min./ft.	SOIL IDENTIFICATION	SAMPLE NO
0 1'-0"			1' OF FROST	
	12		BROWN FINE SAND, WOOD, AND GRAVEL FILL	1 1'-2'6" REC 12"
5				2 5'-6'6" REC 12"
7'-0"	18		TOP OF ROCK 7'-0"	
		6 5 5 6 5 7 8 5 7 16 17 19 21 16 18 27	PINK GRANITE VERY SEAMY MEDIUM HARD @ 15' BECOMES VERY HARD	C-1 7'-12' REC 16" C-2 12'-16'6" REC 22" C-3 16'6"-19'6" REC 60" C-4 19'6"-23' REC 42"
23'-0"				

BOTTOM OF BORING 23'-0"

NOTES:

1. WATER LEVEL AT 3' AFTER 1 HOUR.
2. 2" ROCK CORE.

BORING NO. B-3 GROUND ELEV. 74

DEPTH	SAMPLER BLOWS FT	CORE RATE	SOIL IDE
0 2'-0"			2' OF FR
	22		BROWN F COARSE S GRAVEL.
5	28		FILL
8'-0"			TOP OF R
		13 14 16 20 24 11 12 19 19 21 16 21 20 31 26 11 14 12 16	PINK GRA VERY SEA HARD
25 28'-0"			

BOTTOM OF BORING 28

NOTES:

1. WATER LEVEL AT 7' AFTER 2 HOURS.
2. 2" ROCK CORE.

BORING NO. B-6 GROUND EL. 70.9 DATE: 3-69

DEPTH	SAMPLER BLOWS FT	CORE RATE min./ft.	SOIL IDENTIFICATION	SAMPLE NO.
0	2			1 0'-1'6" REC 10"
5	2		BROWN COARSE TO FINE SAND AND GRAVEL, LITTLE SILT, FILL	2 5'-6'6" REC 12"
9'-0"			TOP OF ROCK 9'-0"	
		3 3 3 4 5 5 7 10 15 20	PINK GRANITE SEAMY AND HARD 6" SEAM OF TRAP ROCK @ 13'	C-1 9'-14' REC 56" C-2 14'-19' REC 96"
10'-0"				

BOTTOM OF BORING 10'-0"

NOTES:

1. WATER LEVEL AT 3'-6" AFTER 3 HOURS.
2. NX ROCK CORE.

BORING NO. B-7 GROUND ELEV. 74.9 DATE: 2-69

DEPTH	SAMPLER BLOWS FT	CORE RATE min./ft.	SOIL IDENTIFICATION	SAMPLE NO.
0	12		BROWN COARSE TO FINE SAND & COARSE TO FINE GRAVEL (LOST SPLIT SPOON IN HOLE - NO SAMPLE)	
5 5'-6"			TOP OF ROCK 5'-6"	
		6 6 5 6 2 6 8 10 15	PINK GRANITE TILL SEAM FROM 9'-6" TO 11'-0" THEN BACK TO GRANITE	C-1 5'6"-10'6" REC 43" 1 C-2 11'-15' REC 43"
15'-0"				

BOTTOM OF BORING 15'-0"

NOTES:

1. HOLE CAVED IN AT 5' (NO WATER READINGS).
2. NX ROCK CORE.

BORING NO. B-9 GROUND ELEV. 60.4

DEPTH	SAMPLER BLOWS FT	CORE RATE	SOIL IDE
0	5		BROWN COAR SAND & COA GRAVEL. L
		6	TOP OF ROC
5		5 7 7 4 5 5 5 5 5 5 5 5 8 8 10 15 19 3 6 7 15	PINK GRAN WEATHERED VERTICAL S (CORE BARR KEPT JAMM CHANGED BI
25'-0"			

BOTTOM OF BORING 25'-

NOTES:

1. WATER LEVEL AT -8'-0" FROM GROUND LEVE
2. 1 3/8" ROCK CORE

SHEET NO.

ING NO. B 3 GROUND ELEV. 74.4 DATE: 2 69

PTH	SAMPLER BLOWS FT	CORE RATE	SOIL IDENTIFICATION	SAMPLE NO.
-0"			2' OF FROST	
	22		BROWN FINE TO COARSE SAND AND GRAVEL, COBBLES, FILL	1 2'-3'6" REC 12"
-0"	28		TOP OF ROCK 8'-0"	2 5'-6'6" REC 16"
		13	PINK GRANITE VERY SEAMY HARD	C-1 8'-13' REC 12"
		14		
		18		
		20		
		24		
		11		C-2 13'-18' REC 47"
		12		
		19		
		19		
		21		C-3 18'-23' REC 59"
		16		
		21		
		20		
		31		
		25		C-4 23'-28' REC 30"
		11		
		16		
-0"		12		
		14		
		16		

BOTTOM OF BORING 28'-0"

ES:
WATER LEVEL AT 7' AFTER 2 HOURS.
2" ROCK CORE.

BORING NO. B-4 GROUND ELEV. 60.4 DATE: 2 69

DEPTH	SAMPLER BLOWS FT	CORE RATE	SOIL IDENTIFICATION	SAMPLE NO.
0			GRAY, BROWN WEATHERED ROCK WITH COARSE SAND AND GRAVEL	1 0'-1'6" REC 18"
3'-0"	91		TOP OF ROCK 3'-0"	
		4	PINK GRANITE SEAMY AND HARD VERTICAL SEAMS	C-1 3'-8' REC 60"
5		4		
		4		
		9		
		12		
		7		C-2 8'-11'6" REC 42"
10		8		
		17		
		30 : 6"		C-3 11'6"-15'6" REC 60"
		3		
		5		
15		5		
		7		
16'-6"		6		

BOTTOM OF BORING 16'-6"

NOTES:
1. WATER LEVEL AT +3'-3" FROM GROUND LEVEL
2. LOST WATER AT 6'
3. 1 3/8" ROCK CORE

BORING NO. B 5 GROUND EL 73.0 DATE 3 69

DEPTH	SAMPLER BLOWS FT	CORE RATE	SOIL IDENTIFICATION	SA NO
0				
2'-0"	9		BROWN LOAM FOR 6" TO BROWN FINE TO COARSE	1 0' RE
5	37		BROWN COARSE TO FINE SAND AND COARSE TO FINE GRAVEL, LITTLE SILT	2 5' RE
10'-0"			TOP OF ROCK 10'-0"	
		3	PINK GRANITE	C-1 10
		4	SEAMY	
		5		
		10		
15'-0"		15		

BOTTOM OF BORING 15'-0"

"SAND, LITTLE FINE TO MED UM GRAVEL, TRACE OF SILT

NOTES:
1. WATER LEVEL AT 6' AFTER 1/2 HOUR
2. 1 3/8" ROCK CORE

BORING NOTES

1. TEST BORINGS WERE MADE BY C.L. GUILD OF ...LLING & BORING CO. ... BRAINTREE, MASSACHUSETTS DURING FEBRUARY, MARCH AND JUNE OF ...
2. THE BORING LOGS SHOWN HAVE BEEN REPRODUCED FROM THE ORIGINAL LOGS PREPARED BY C.L. GUILD.
3. THE ORIGINAL BORING LOGS, THE SOIL SAMPLES AND THE ROCK CORES ... SEEN AT THE DEPARTMENT OF PUBLIC WORKS, DIVISION OF WATERWAYS ... REQUEST.
4. SAMPLER BLOW COUNT WAS MEASURED ON A 1 3/8" SPLIT SPOON SAMPLE ... A 140 LB. HAMMER AND A 30" FALL. ROCK CORES WERE MADE ... BITS OF THE SIZES INDICATED.
5. PREVIOUS BORINGS WERE MADE ALONG THE CONDUIT AND IN IRON HILL ... THEIR APPROXIMATE LOCATION IS SHOWN ON SHEET 3 (FIND DATE) ... INFORMATION MAY BE OBTAINED FROM THE DIVISION OF WATERWAYS.
6. THE ENGINEER DOES NOT GUARANTEE THE ACCURACY OF THE BORING LO...

RING NO. B-9 GROUND ELEV. 60.4 DATE: 2 69

EPTH	SAMPLER BLOWS FT	CORE RATE	SOIL IDENTIFICATION	SAMPLE NO.
	5		BROWN COARSE TO FINE SAND & COARSE TO FINE GRAVEL, LITTLE SILT	1 0'-1'6" REC 18"
		6	TOP OF ROCK 3'-0"	
		5		C-1 3'-7' REC 4 1/2"
		7	PINK GRANITE	
		7	WEATHERED AND SEAMY	
		8	VERTICAL SEAMS	C-2 7'-11' REC 26"
		5		
		5	(CORE BARREL	
		5	KEPT JAMMING UP)	C-3 11'-16' REC 32"
		6		
		5		
		5		
		5		
		6		C-4 16'-21' REC 27 1/2"
		8		
		10		
		15		
		19	CHANGED BIT AT 21'	C-5 21'-25' REC 31 1/2"
		3		
		4		
-0"		7		
		15		

BOTTOM OF BORING 25'-0"

NOTES:
1. WATER LEVEL AT -3'-2" FROM GROUND LEVEL
2. 1 3/8" ROCK CORE

BORING NO. B-10 GROUND ELEV. 58.6 DATE: 2 69

DEPTH	SAMPLER BLOWS FT	CORE RATE	SOIL IDENTIFICATION	SAMPLE NO.
0			BROWN, COARSE TO FINE SAND & COARSE TO FINE GRAVEL, LITTLE SILT	1 0'-1'6" REC 12"
3'-6"	6		TOP OF ROCK 3'-6"	
		6	PINK GRANITE WEATHERED	C-1 3'6"-5'6" REC 7"
5		5	AND SEAMY	C-2 5'6"-7'6" REC 21"
		8	-GOOD ROCK	
		7	FROM 7'-6"	
		5		C-3 7'6"-10' REC 28"
		10		
10		9/6"		C-4 10'-15' REC 60"
		5		
		7		
		10		
		15		
15		22		

BOTTOM OF BORING 15'-0"

NOTES:
1. WATER LEVEL AT -4'-11" FROM GROUND LEVEL
2. 1 3/8" ROCK CORE

PROPOSED FLOOD CONTROL CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMAN
WEYMOUTH

BORING LOGS I

DEPARTMENT OF PUBLIC WORKS OF MASS
DIVISION OF WATERWAYS

METCALF & EDDY, INC. | ENGINEERS
BOSTON PALO ALTO

OCTOBER, 1969	DESIGNED BY
DPW REVIEW BY	DATE 10/69 TRACED BY
	APPROVED BY

CONTRACT NO. 2664 | ACC. NO. C

BORING NO. B-11 GROUND ELEV. 61.1 DATE: 2-69

DEPTH	SAMPLER BLOWS FT.	CORE RATE min./ft.	SOIL IDENTIFICATION	SAMPLE NO.
0				
1'-0"			1'-0" OF FROST	
	2		BROWN FINE TO COARSE SAND, SOME COARSE TO FINE GRAVEL, LITTLE SILT	1 0-11'-6" REC 12"
3'-6"				
5		6		C-1
		6		3'6"-8'6"
		10		REC 58 1/2
		20		
		26		
		4		C-2
10		7		8'-6"-11'
		12/9"		REC 28"
		20/6"		C-3"
		3/6"		C-4
		9		11'6"-16'
15		8		REC 54"
		9		
		13		
		15		C-5**
		20/2		C-6
		4		17'2"-22'2"
20		8		REC 57 1/2"
		12		
		15		
22'-2"		25		

BOTTOM OF BORING 22'-2"

NOTES:

1. CHANGED BITS AT 8'-6", 11'-6" AND AT 17'-2".
2. WATER LEVEL AT +2'-6" FROM GROUND LEVEL
3. 1 3/8" ROCK CORE.

*C-3 11'-11'6" REC. 6" **C-5 16'-17'2" REC. 16"

BORING NO. B-12 GROUND ELEV. 72.5 DATE: 2-69

DEPTH	SAMPLER BLOWS FT.	CORE RATE min./ft.	SOIL IDENTIFICATION	SAMPLE NO.
0				
1'-6"			1'-6" OF FROST	
			BROWN FINE SAND, WOOD	1
5'-0"	13		AND GRAVEL, FILL	2'-3'-6" REC 12"
5'-6"	11/6"		BROWN FINE SAND & FINE GR	2"
5		5	PINK GRANITE AND	C-1
		6	TRAP ROCK	5'-10'
		7	VERY SEAMY	REC 37"
		8	MEDIUM HARD	
10'-0"		13		
10		11	PINK GRANITE	C-2
		10	NOT TOO SEAMY	10'-15'
		16	HARD	REC. 44"
		10		
15'-0"		19		
15		11	PINK GRANITE &	C-3
		12	TRAP ROCK	15'-20'
		16	VERY HARD	REC. 60"
		14		
20'-0"		21		

BOTTOM OF BORING 20'-0"

NOTES:

1. WATER LEVEL AT 9' AFTER 1 1/2 HOUR.
2. 1 3/8" ROCK CORE

*2.9'-5' REC. 9"

BORING NO. B-18 GROUND ELEV. 66.0

DEPTH	SAMPLER BLOWS FT.	CORE RATE min./ft.	SOIL IDENTIFICATI
0			
2'-0"			2' OF FROST
5	51		BROWN FINE TO MEDIUM SA
6'-0"			LITTLE FINE GRAVEL, FIL
			BROWN FINE TO MEDIUM
			SAND
	16		LITTLE FINE GRAVEL, F
10			
12'-0"	12		
15	21		GRAY FINE TO MEDIUM SA
			LITTLE SILT & FINE T
			MEDIUM GRAVEL, TRACE
20			COARSE SAND
	31		
23'-0"			
25'-7"	16		BROWN FINE TO COARSE SAND, LITTLE FINE TO COARSE GRAVEL, COBBL
		6	PINK GRANITE
		11	VERY HARD
		12	
30		16	
		16	
		13	
		16	
		16	
		15	
35'-7"		21	

BOTTOM OF BORING 35'7"

NOTES:

1. 25' TO 25'7" RUNNING SAND
2. WATER LEVEL AT 6'-6", 2/14/69
3. 3" ROCK CORE

BORING NO. B-21 GROUND ELEV. 65.4 DATE: 3-69

DEPTH	SAMPLER BLOWS FT.	CORE RATE min./ft.	SOIL IDENTIFICATION	SAMPLE NO.
0				
1'-0"			1' OF FROST	
	21		BROWN FINE SAND, LITTLE FINE GRAVEL, FILL	1 2'-3'6" REC 12"
5'-6"	21			2"
5		10	WHITE GRANITE	C-1
		20	VERY HARD	5'6"-10'6"
		22		REC 56"
		24		
10		25		
		6	10'-6" TO 11'-6" VERY	C-2
		7	SEAMY	10'6"-15'6"
		28		REC 38"
		30		
15'-6"		27		

BOTTOM OF BORING 15'-6"

NOTES:

1. WATER LEVEL AT 3'-6" AFTER 2 HOURS
2. 1 3/8" ROCK CORE.

*2. 9'-9'6" REC 12"

BORING NO. 22 GROUND ELEV. 57.6 DATE: 3-69

DEPTH	SAMPLER BLOWS FT.	CORE RATE min./ft.	SOIL IDENTIFICATION	SAMPLE NO.
0				
2'-0"			2' OF FROST	
	14		BLACK COAL & ASHES,	1
5'-0"			FILL	2'-3'6" REC 12"
	20		BROWN FINE SAND, TRACE	2"
7'-0"			OF FINE GRAVEL	3"
	25		BROWN FINE SAND, LITTLE	4
			FINE GRAVEL, TRACE OF	8'-9'6"
10'-0"	31		SILT	REC 12"
11'-6"	30		BROWN FINE TO COARSE	5***
13'-0"	36		BROWN FINE SAND, TRACE	6****
		6	PINK GRANITE	C-1
15		9	VERY HARD - FEW SEAMS	12'-18'
		12		REC 52"
		18		
18'-0"		20		

BOTTOM OF BORING 18'-0"

NOTES:

1. WATER LEVEL AT 12' AFTER 1 HOUR
2. 3" ROCK CORE

*2. 5'-6'-6" REC. 12" ***5, 10'-11'-6" REC. 12"
**5, 6'-6"-8' REC. 12" ****6, 11'-6"-18' REC. 1"

BORING NO. B-23 GROUND ELEV. 65.4

DEPTH	SOIL IDENTIFICATI
0	
	BROWN
5	
	FINE TO MEDIUM
	SAND SOME
10	COARSE GRAVEL
17'-6"	
20	CORED ROCK
	RUN NO. 1
	RECOVERY 42"
24'-6"	

BOTTOM OF BORING 24'-6"

NOTE: AUGER BORING

GROUND ELEV. 66.0 DATE: 2 69

CORE RATE min ft	SOIL IDENTIFICATION	SAMPLE NO.
	2' OF FROST	
	BROWN FINE TO MEDIUM SAND, LITTLE F-M GRAVEL, FILL	1 2'-3'6" REC 12"
	BROWN FINE TO MEDIUM SAND LITTLE FINE GRAVEL, FILL	2 5'-6'6" REC 12"
		3 10'-11'6" REC 12"
	GRAY FINE TO MEDIUM SAND, LITTLE SILT & FINE TO MEDIUM GRAVEL, TRACE OF COARSE SAND	4 15'-17'-5" REC 11"
		5 20'-21'-6" REC 12"
	BROWN FINE TO COARSE SAND, LITTLE FINE TO COARSE GRAVEL, COBBLES	6 23'6"-25' REC 12"
6 11 12 14 16 13 16 16 15 21	PINK GRANITE VERY HARD	C-1 25'7"-33'7" REC 60"
		C-2 30'7"-35'7" REC 59"

BOTTOM OF BORING 35'7"

HRING SAND
'-0", 2/14/69

BORING NO. B-19 GROUND ELEV. 65.5 DATE: 2 69

DEPTH	SAMPLER BLOWS FT	CORE RATE min ft	SOIL IDENTIFICATION	SAMPLE NO.
0 2'-0"			2' OF FROST	
	78		BROWN FINE TO COARSE SAND, LITTLE FINE TO MED. GRAVEL, SMALL COBBLES	1 2'-3'6" REC 12"
5	38			2 5'-6'6" REC 12"
10'-5"			TOP OF ROCK 10'-5"	
		6 11 12 15 14	WHITE GRANITE VERY SEAMY MEDIUM HARD	C-1 10'5"-15'5" REC 40"
15		8 10 12 12 13		C-2 15'5"-20'5" REC 69"
20		10 14 14 15 15		C-3 20'5"-25'5" REC 68"
25'-5"				

BOTTOM OF BORING 25'-5"

NOTES:

1. LOST WATER AT 11'-6".
2. 2" ROCK CORE.

BORING NO. B-20 GROUND ELEV. 57.0 DATE: 2 69

DEPTH	SAMPLER BLOWS FT	CORE RATE min ft	SOIL IDENTIFICATION	SAMPLE NO.
0 2'-0"			2' OF FROST	
	21		BROWN FINE TO COARSE SAND, LITTLE FINE TO MEDIUM GRAVEL, FILL	1 2'-3'6" REC 12"
5	22			2 5'-6'6" REC 12"
10	18			
15'-0"			TOP OF ROCK 15'-0"	
15		11 16 20 17 21	PINK GRANITE VERY HARD	C-1 15'-20' REC 58"
20		25 26 19 21		C-2 20'-25' REC 59"
25'-0"		25		

BOTTOM OF BORING 25'-0"

NOTES:

1. LOST WATER AT 15'.
2. WATER LEVEL AT 18', 2/14/69.
3. 2" ROCK CORE.

GROUND ELEV. 65.4 DATE: 6 69

SOIL IDENTIFICATION	
BROWN FINE TO MEDIUM SAND SOME COARSE GRAVEL	
CORED ROCK RUN NO. 1 RECOVERY 42"	

BOTTOM OF BORING 26'-6"

BORING NO. B-24 GROUND ELEV. 65.2 DATE: 6 69

DEPTH	SOIL IDENTIFICATION	
0	BROWN FINE TO MEDIUM SAND SOME COARSE GRAVEL	
5		
10		
15		
18'-0"	CORED ROCK RUN NO. 1 RECOVERY 96"	1
20		
25'-0"		

BOTTOM OF BORING 25'-0"

NOTE: AUGER BORING

NOTE: FOR GENERAL TEST BORING NOTES SEE SHEET 21.

PROPOSED FLOOD CONTROL
CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMANS POND
WEYMOUTH

BORING LOGS II

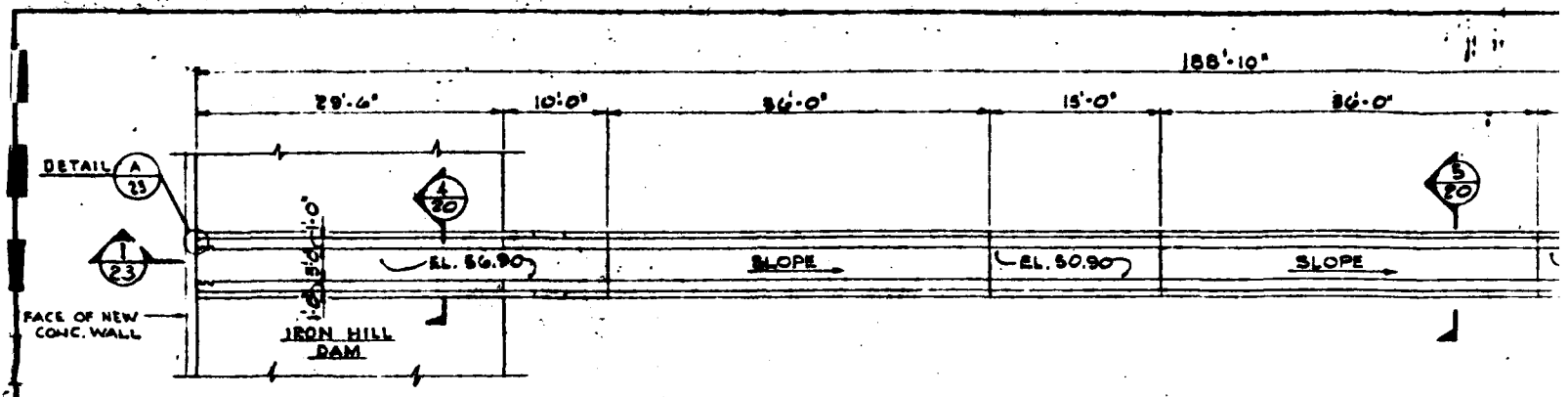
DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS

METCALF & EDDY, INC. | ENGINEERS
BOSTON SAN JUAN PALO ALTO

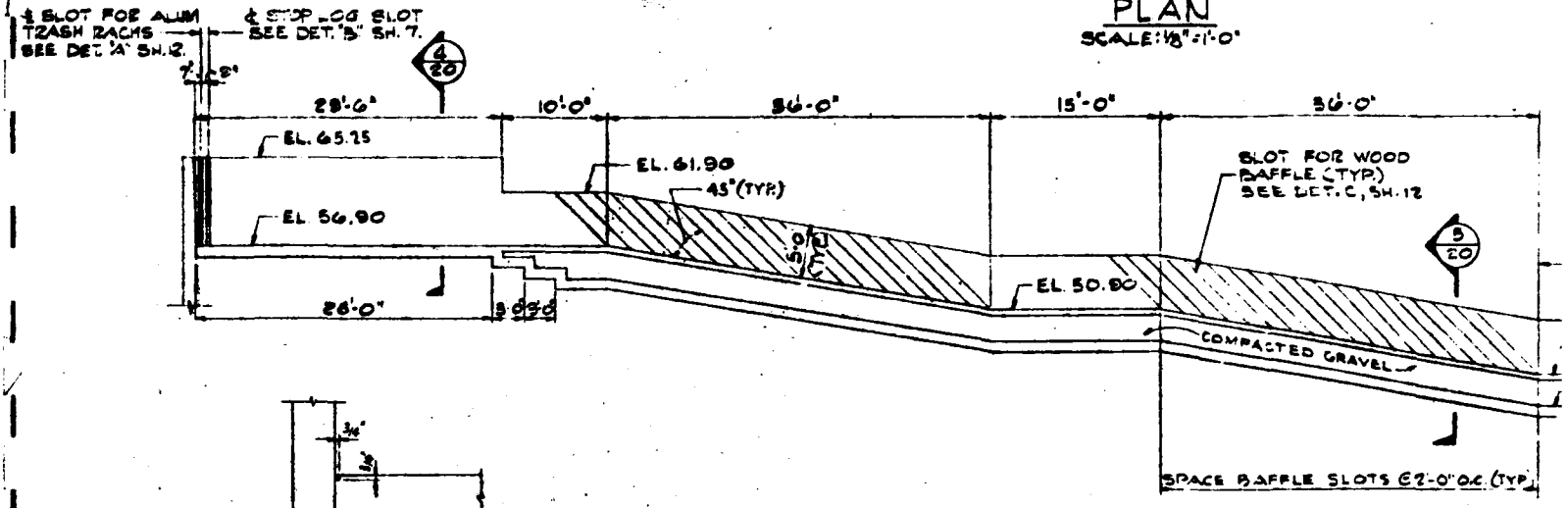
OCTOBER, 1969	DESIGNED BY JCT
REVIEW BY JCT DATE 10/69	TRACED BY
	APPROVED BY

CONTRACT NO. 2664 ACC. NO. 04762-V

2484-R

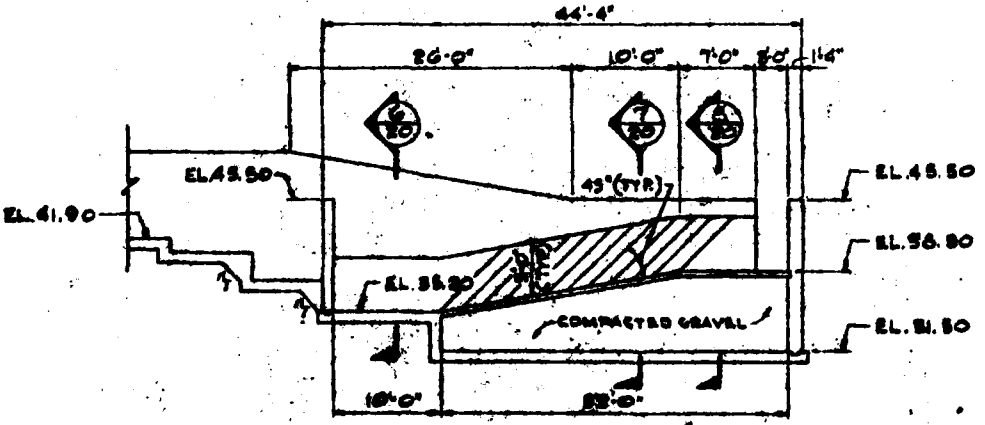


PLAN
SCALE: 1/8" = 1'-0"



SECTION
SCALE: 1/8" = 1'-0"
1/23

DETAIL
SCALE: 1/2" = 1'-0"
A/23



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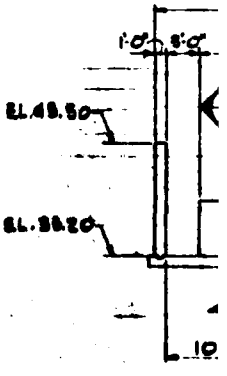
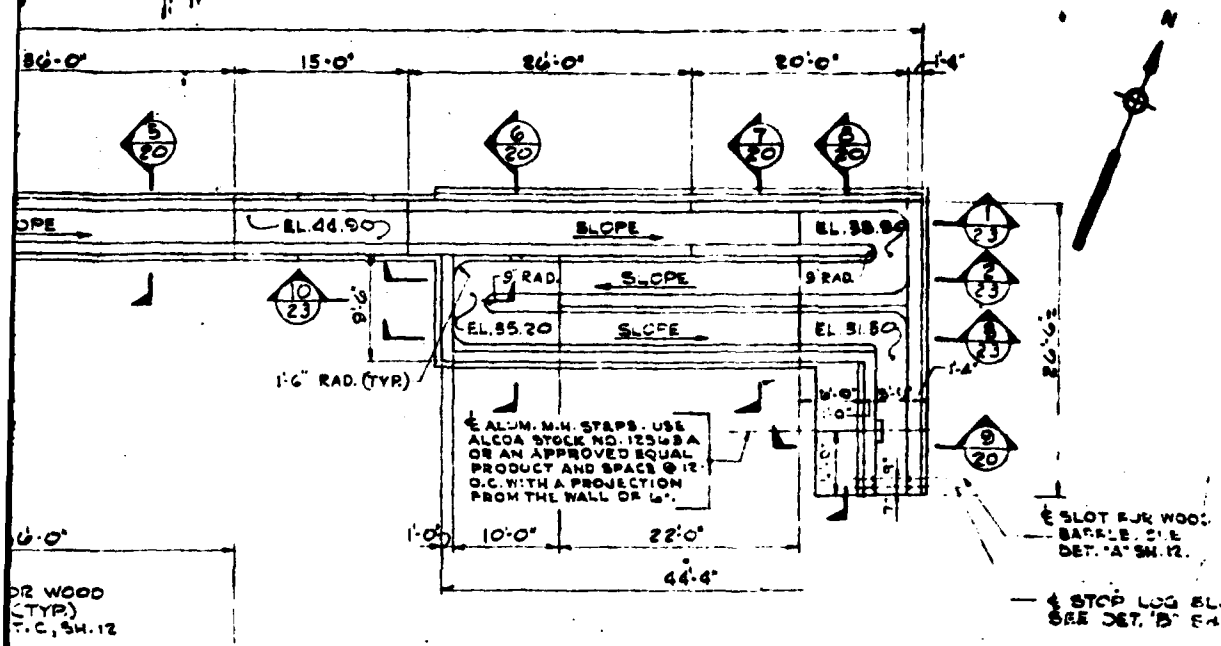
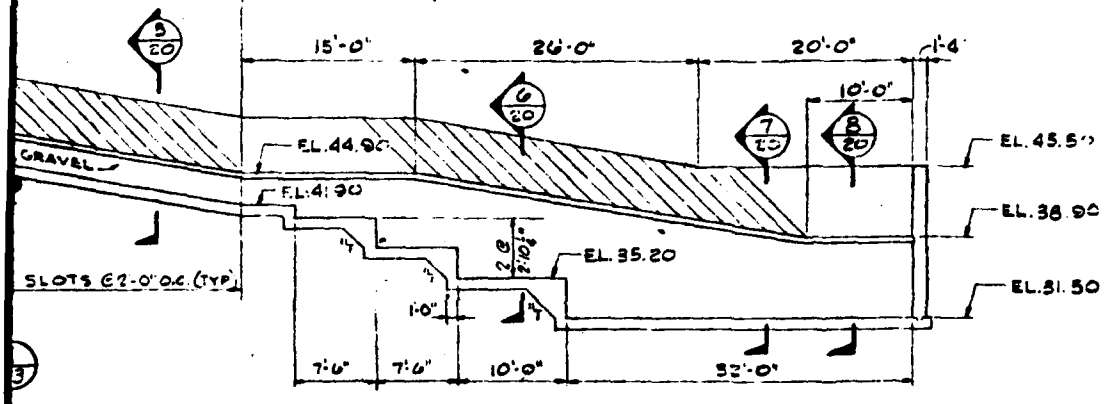
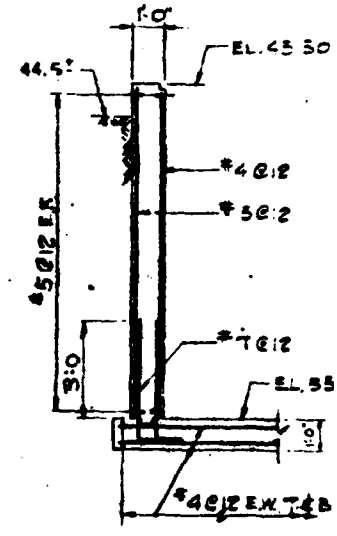
2/23



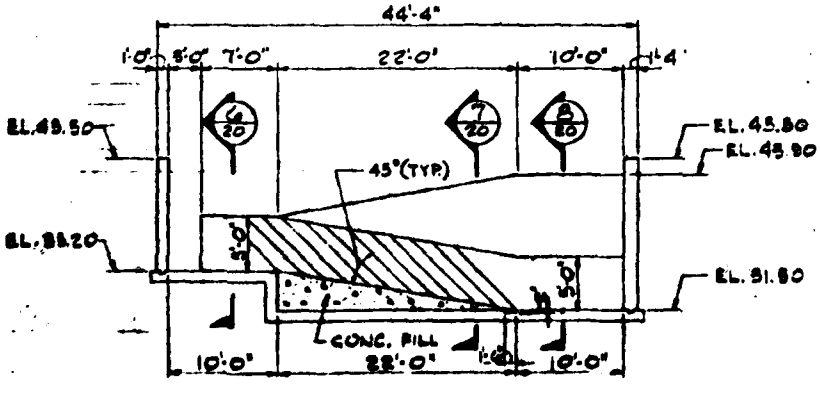
SHEET NO. 2







SECTION
SCALE: 1/2" = 1'-0"



SECTION
SCALE: 1/8" = 1'-0"

NO.	REVISION	DATE BY	CHECKED BY	DESCR

PROPOSED FLOOD CONTROL CONDUIT & SIPHON SPILLWAYS

HERRING BROOK

PLEASANT STREET TO WHITMANS
WEYMOUTH

IRON HILL FISHWAY

DEPARTMENT OF PUBLIC WORKS OF MASSA
DIVISION OF WATERWAYS

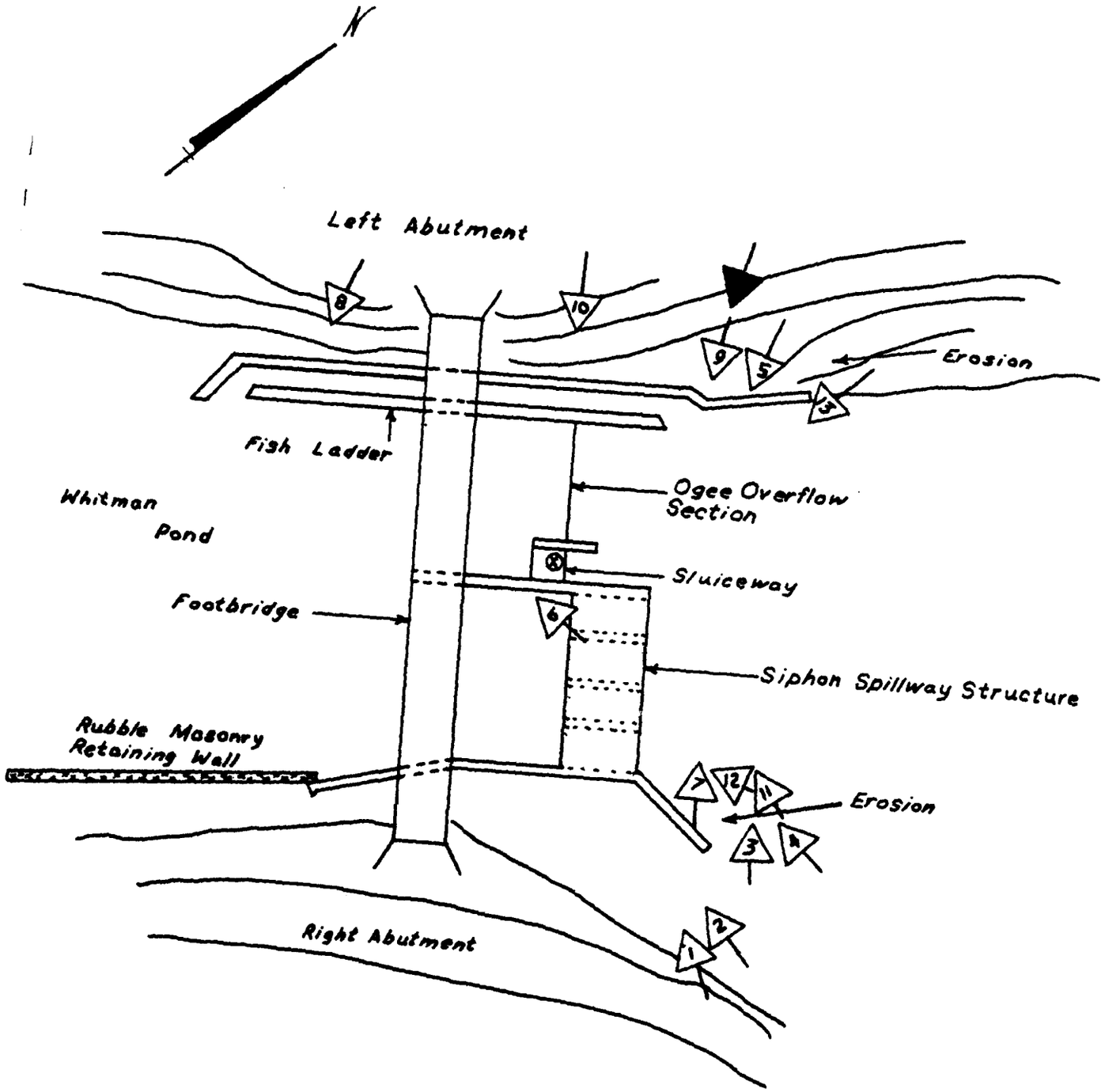
METCALF & EDDY, INC. | ENGINEERS
BOSTON · SAN JUAN · PALO ALTO

SEPTEMBER, 1970	DESIGNED BY A.D.
E.P.H. REVISED BY ___ DATE ___	TRACED BY Sue
	APPROVED BY [illegible]

CONTRACT NO. 2664 | ACC. NO. 04

APPENDIX C

PHOTOGRAPHS



LOUIS BERGER & ASSOC., INC WELLESLEY, MASS. ARCHITECT - ENGINEER	U.S. ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.

NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS

WHITMANS POND DAM

SKETCH PLAN SHOWING LOCATION & ORIENTATION OF PHOTOS

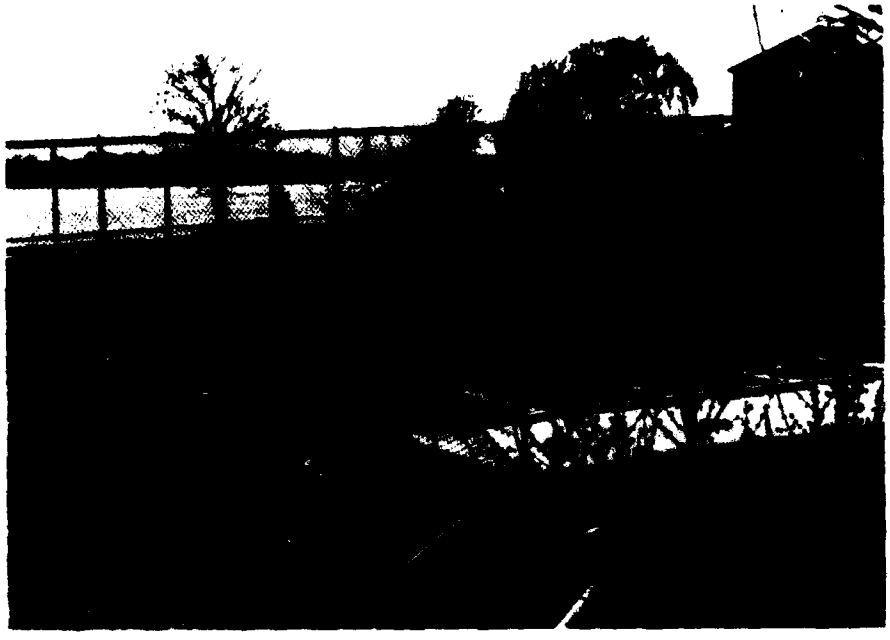
STATE - MA

SCALE

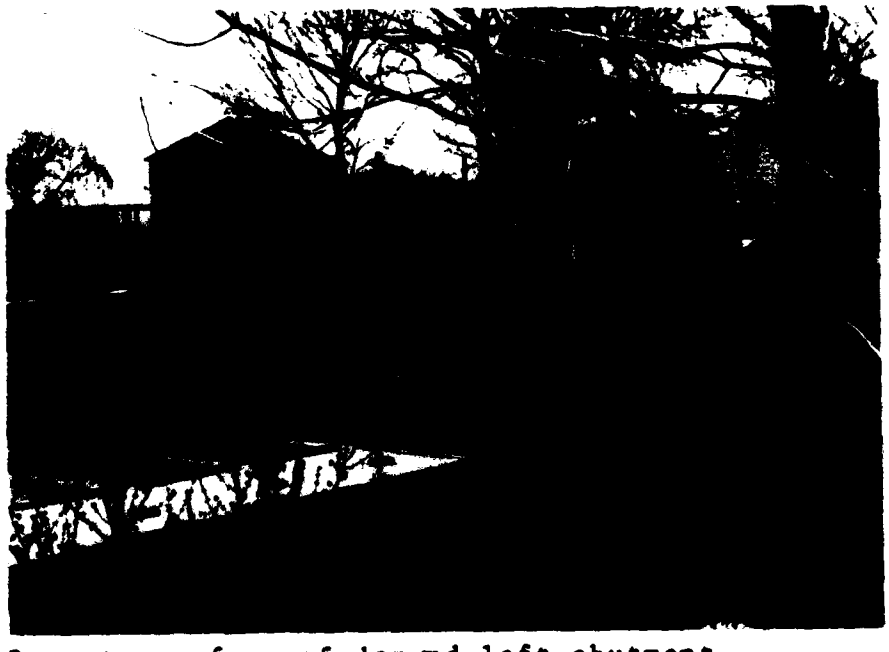
DATE

C-1

WHITMANS POND DAM



1. Downstream face of dam and right abutment

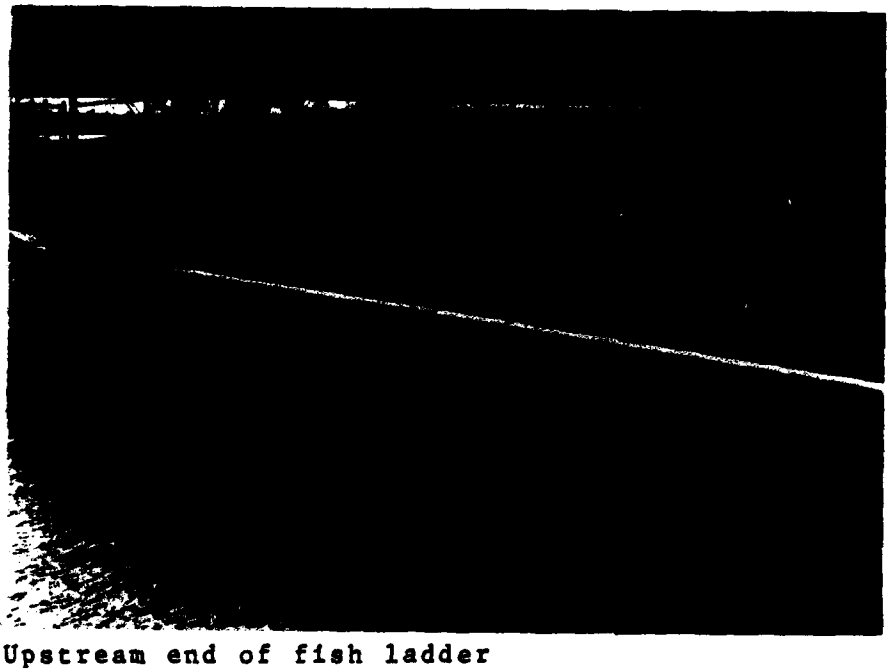


2. Downstream face of dam and left abutment

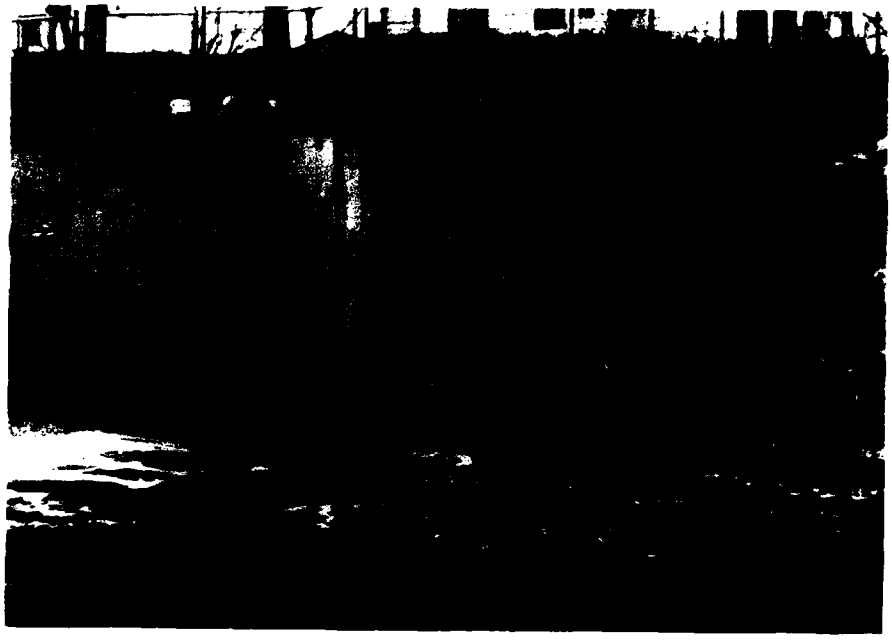
3. Erosion at left downstream training wall

4. Downstream face of siphon spillway structure and ogee overflow section

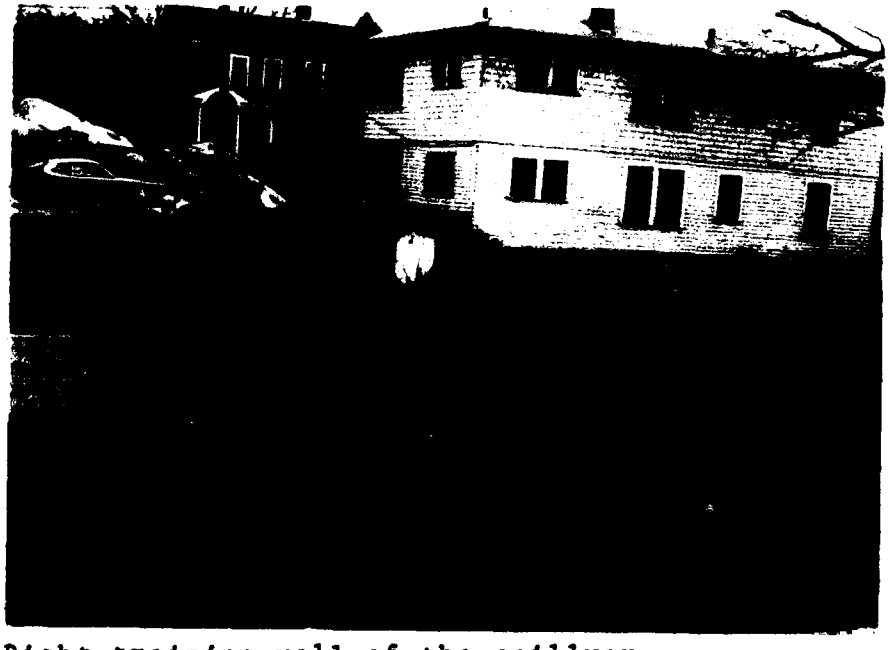
5. Displaced riprap and erosion downstream of right training wall



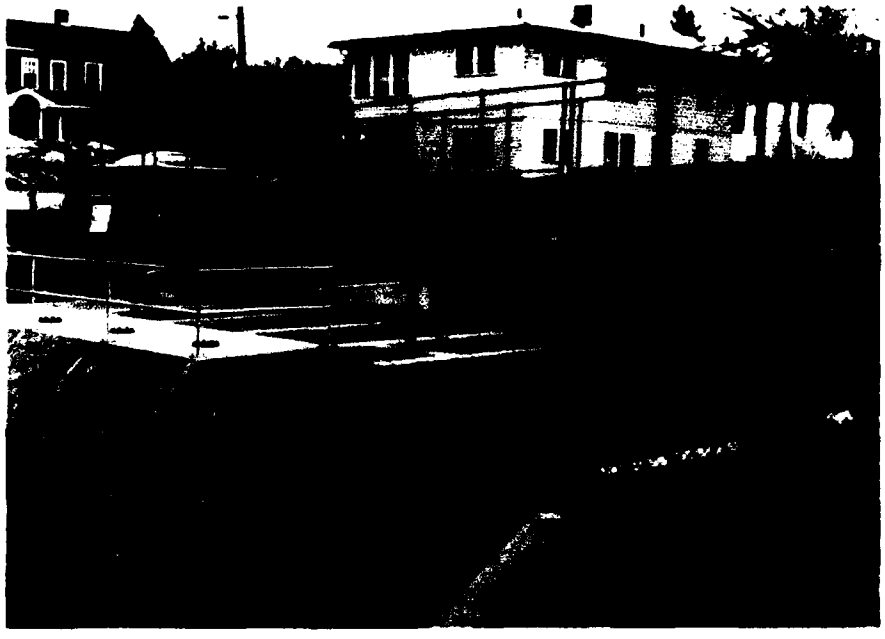
6. Upstream end of fish ladder



7. Downstream end of fish ladder

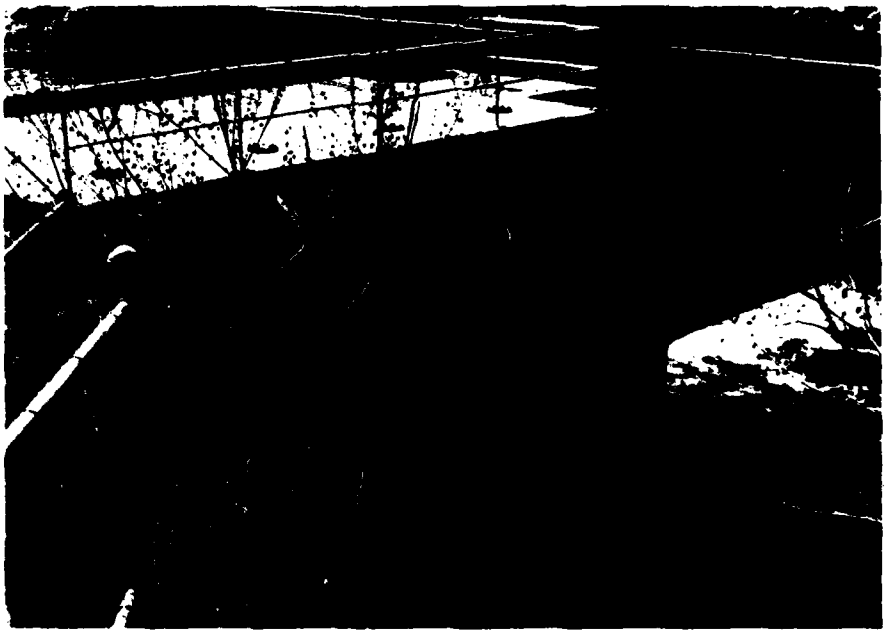


8. Right training wall of the spillway approach channel



9. Downstream face of dam from left abutment

10. View along crest of dam from left abutment



11. Downstream face of concrete ogee overflow section

12. Downstream end of siphon spillway structure (4 units)

13. Concrete ogee overflow section. Note sluiceway through lower right corner of overflow section.

APPENDIX D

HYDROLOGIC AND HYDRAULIC COMPUTATIONS

BY RFB DATE 3-25-80 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. 1 OF
CHKD. BY DATE INSPECTION OF DAMS PROJECT
SUBJECT [illegible] #4

[illegible] AREA, [illegible]

AREA 1 READ #2 31.26 READ #3 [illegible].84 AVE = 29.55
" #1 1.71 " #2 31.26
29.55 29.58

AREA 2 READ #2 [illegible].47 READ #3 58.20 AVE = 27.72
" #1 2.75 " #2 30.47
27.72 27.72

AREA 3 READ #2 100.30 READ #3 131.[illegible] AVE = 31.01
" #1 69.29 " #2 100.21
31.01 31.01

DRAINAGE AREA = 88.3 (0.1435) = 12.67 SQ.MI = 8109 AC[illegible]

RESERVOIR AREA, ELEV. 66

READ #2 43.30 READ #3 4[illegible]
" #1 41.20 " #2 43.30
2.10 2.06

RESERVOIR AREA = 2.08 x 91.83 = 191 ACRES

AREA ELEV. 70

READ #2 48.33 READ #3 51.15
" #1 45.54 " #2 48.33
2.79 2.82

AREA ELEV 70 = 2.805 x 91.83 = 258 ACRES

AREA ELEV 80 READ #2 32.96 READ #3 38.00
" #1 27.91 " #2 32.96
5.05 5.04

AREA ELEV 80 5.04 x 91.83 = 463 ACRES

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BY RFB DATE 6-15-80 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. ____ OF ____

CHKD. BY ____ DATE ____ PROJECT W.R.S.E.

SUBJECT WHITMAN'S POND, PMF Check

Check Town of Weymouth, Dam Inspection Report dated 11 March, 1967, Maximum Discharge Given as 5,100 cfs Against Corps of Engineers Envelope Curve for Flat & Coastal Areas.

Using COE Curve

$$\text{Total Area} = \frac{7750 \text{ Acres}}{640 \text{ A/Mi}^2} = 12.11 \text{ sq Mi}$$

Deduct Weymouth Great Pond D.A. of 2.64 sq Mi

Deduct ½ Old Swamp & Iron Swamp D.A. of 1.75 sq Mi

Net D.A. = 7.47 sq Mi

From Envelope Curve for D.A. = 7.47

MPF in cfs / sq Mi = 750 cfs / sq Mi

$Q = D.A. \times 750 = 7.47 \times 750 = 5600 \cong 5100$

Use Town of Weymouth Hydrograph for Routing ∴ PMF = 5100 cfs

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BY RFE DATE 6-15-90 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. ____ OF ____

CHKD. BY ____ DATE ____ INSPECTION OF FALL PROJECT W-195

SUBJECT WEYMOUTH FORE, DRAINAGE AREA

WEYMOUTH GREAT FRESH AREA ABOVE MAIN ST

READ #2	14.67	READ #3	31.80	54.94
#1	4.53	#2	14.67	31.80
~~18.14~~			20.13	23.14

AREA = 20.14 (0.1435) = 2.89 SQ MI

OLD SWAMP RIVER SWAMP AREA ABOVE TALBOT ST.

READ #2	116.09	READ #3	40.32	
#1	91.69	#2	16.09	
	24.40		24.43	

AREA = 24.42 (0.1435) = 3.50 SQ MI

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BY RES DATE 6-15-80 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. 1 OF 1

CHKD. BY DATE PROJECT W-[illegible]

SUBJECT WEITMAN POND DAM - STORAGE CAPACITY

COMPUTE STORAGE @ ELEV 68.0 , AREA = 224 ACRES

VOL = ½ HA = ½ (66.6-58)(200) = 574 A-F

FROM OLD INVENTORY SHEET VOL = 550 A-F

SAY VOLUME = 550 ACRE-FT

ELEV	AREA ACRES	AVE AREA	Δ VOL	TOTAL VOLUME	SURCHARGE VOLUME
66.6	200			550	
68	224	212	297	847	297
70	258	241	482	1329	779
72	299	278.5	557	1886	1336
74	340	319.5	639	2525	1975
76	381	360.5	721	3246	2696
78	422	401.5	803	4049	3499
80	463	442.5	885	4934	4384

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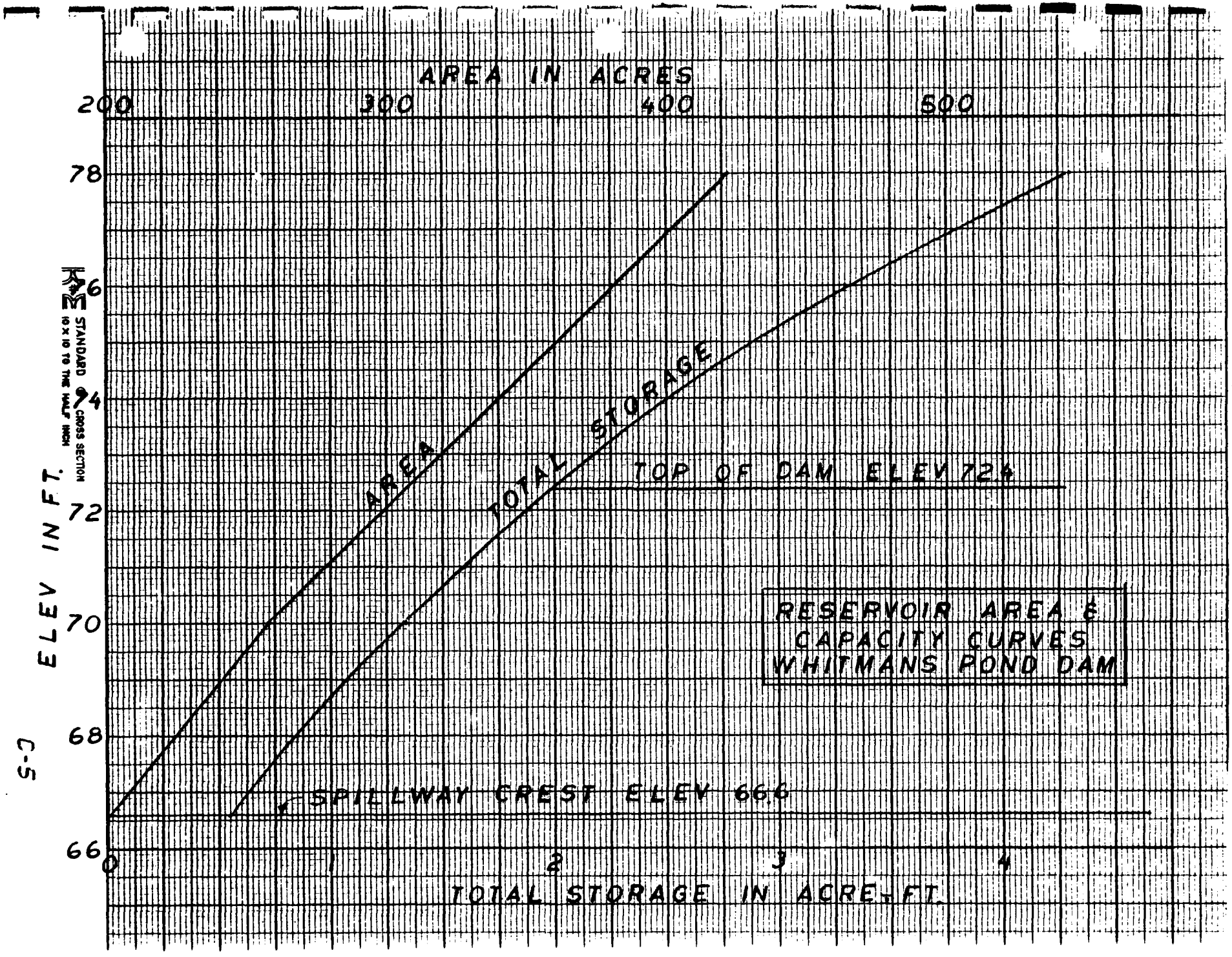

AREA IN ACRES
200
300
400
500
78
76
74
72
70
68
66
ELEV IN FT.
AREA
TOTAL STORAGE
TOP OF DAM ELEV 72.4
SPILLWAY CREST ELEV 66.6
0
1
2
3
4
TOTAL STORAGE IN ACRE-FT.
RESERVOIR AREA & CAPACITY CURVES WHITMANS POND DAM
KEUFFEL & ESSER CO. STANDARD CROSS SECTION 10 X 10 TO THE HALF INCH

S-2

BY RJH DATE

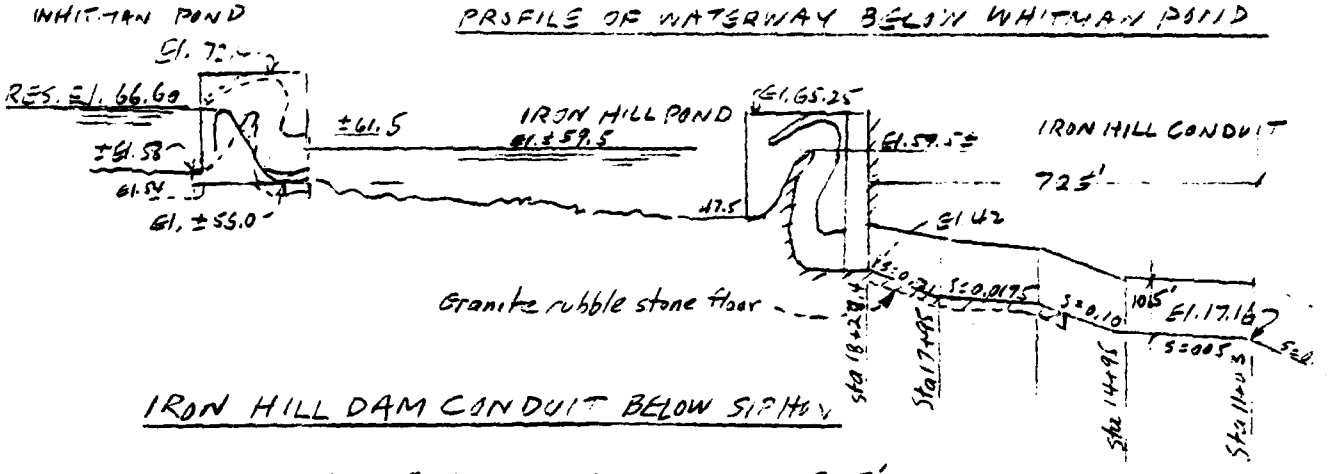
CHKD. BY DATE

LOUIS BERGER & ASSOCIATES INC.

SUBJECT WHITMAN POND RESERVOIR D&M - DISCHARGE CURVES

SHEET NO. 1 OF

PROJECT INSPECTION OF DAMS - MASS



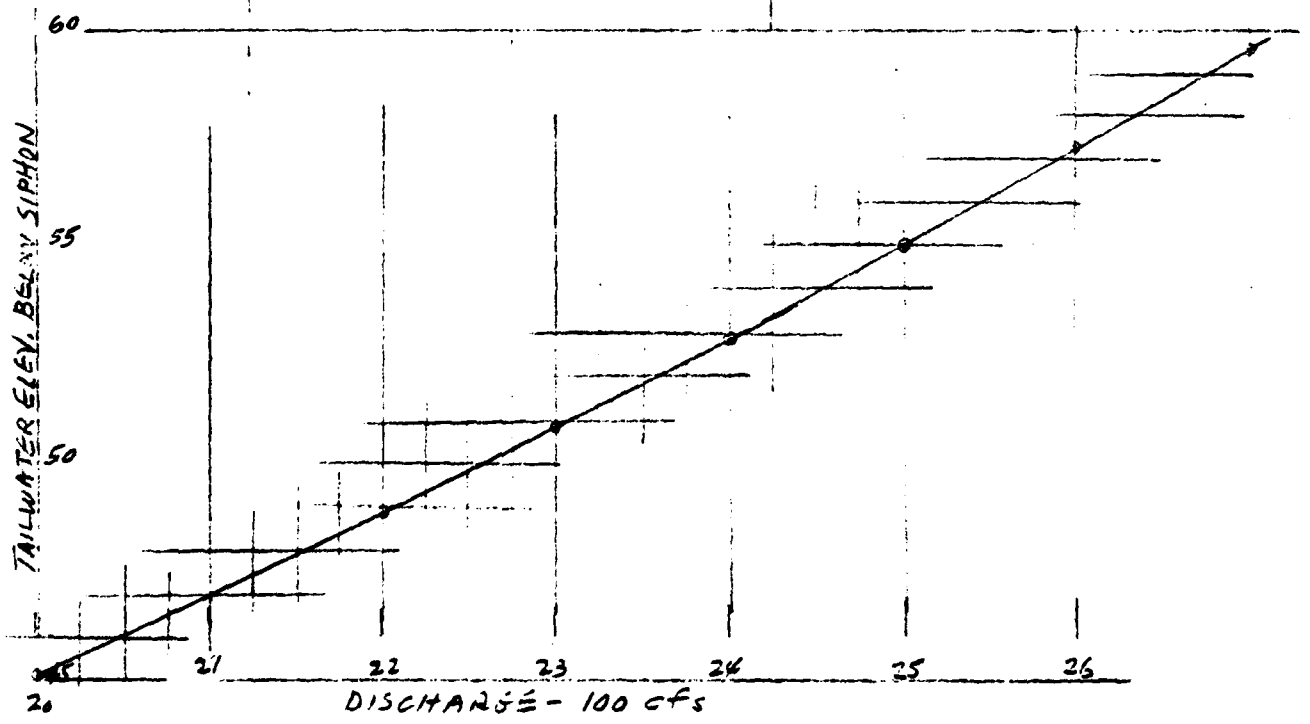
PROFILE OF WATERWAY BELOW WHITMAN POND

IRON HILL DAM CONDUIT BELOW SIPHON

Assume conduit flows full above Sta 11+03 $L = 725'$

Conduit 9.5' wide x 10.5' high - $A = 99.75$ sq. ft. $r = 2.49$ $r^{2/3} = 1.85$ Average $n = 0.017$

Discharge cfs	v	hv	$S = \left(\frac{1.27n}{1.486 r^{2/3}}\right)^2$	SL	d+hv+SL	Elevation of gradient at Siphon outlet
2000	20.05	6.24	0.0155	11.25	11.25	45.N
2200	22.06	7.55	0.0188	13.62	31.67	48.83
2400	24.06	8.99	0.0224	16.20	35.69	52.85
2600	26.07	10.55	0.0263	19.02	40.07	57.23
2800	28.07	12.24	0.0305	22.05	44.79	61.95



BY. DAT DATE

CHKD. BY DATE

LOUIS BERGER & ASSOCIATES INC.

SHEET NO. 2 OF

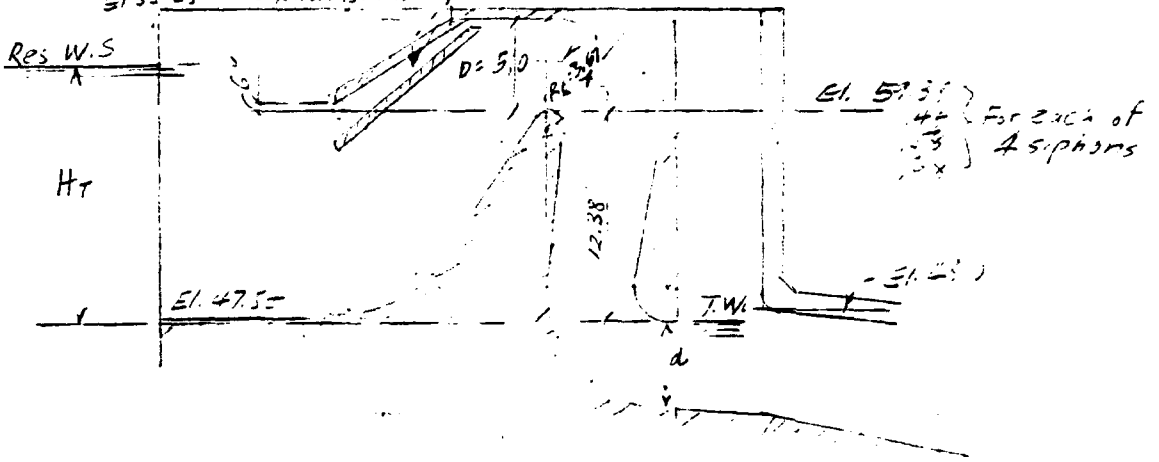
PROJECT

SUBJECT WHITMAN POND RESERVOIR DAM - DISCHARGE CURVES

INSPECTION OF DAMS - MASS.

SIPHON DISCHARGE - IRON HILL DAM

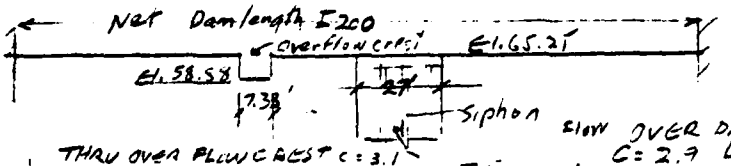
El 55.25 Siphon bracket — Siphon throat 5 x 5.5 - 4 = 27.50



SIPHON DISCHARGE - IRON HILL DAM

$Q = CA\sqrt{2gH_T}$ $\frac{d}{D} = 1.0$ $\frac{R_c}{D} = \frac{3.07}{5} = 0.75$ $C = 0.66$ (Fig 297, Design of Small Dams)

Trial Disch Q	Tailwater Elev	Reservoir Elev.	Siphon #1 H_T	Siphon #1 ΔQ_1	Siphon #2 H_T	Siphon #2 ΔQ_2	Siphon #3 H_T	Siphon #3 ΔQ_3	Siphon #4 H_T	Siphon #4 ΔQ_4	(Q_1) Σ 4 Siphons	Q_1+Q_2
—	—	59.88	12.88	521	0.4	4	0.3	3	0.2	2	530	530
—	—	59.98	12.98	524	12.88	521	0.4	4	0.3	3	1052	1077
—	—	60.08	13.08	526	12.98	524	12.88	521	0.4	4	1575	1635
—	47.0	60.18	13.18	528	13.08	526	12.98	524	12.38	521	2099	2135
2150	47.95	61.68	13.63	537.5	13.63	537.5	13.63	537.5	13.63	537.5	2150	2256
2200	49.90	63.17	14.27	550	14.27	550	14.27	550	14.27	550	2200	
2250	49.82	64.75	14.93	562.5	14.93	562.5	14.93	562.5	14.93	562.5	2250	2573
2300	50.80	66.40	15.60	575	15.60	575	15.60	575	15.60	575	2300	2769
2400	52.85	69.84	16.99	600	16.99	600	16.99	600	16.99	600	2400	3224
2500	55.04	73.48	18.46	625	18.46	625	18.46	625	18.46	625	2500	



THRU OVER FLOW CREST $c = 3.1$ $L = 7.33$ — FLOW OVER DAM $C = 2.9$ $L = 200$

Elev.	H	Q_2	Elev	H	Q_3	Q_2 Crest	Q_1 Siphons	$Q_1+Q_2+Q_3$ ΣQ
58.58	0	0	65.25	0		365	2265	2630
59.88	1.0	23	65.8	0.55	237	416	2282	2933
60.18	1.3	34	66.40	1.15	715	450	2350	3515
61.68	2.8	106	67.00	1.75	1343	526	2317	4176
64.75	5.87	323	68.0	2.75	2645	626	2346	5617
66.4	7.52	469	69.84	4.59	5732	524	2400	8756
69.84	10.96	824						

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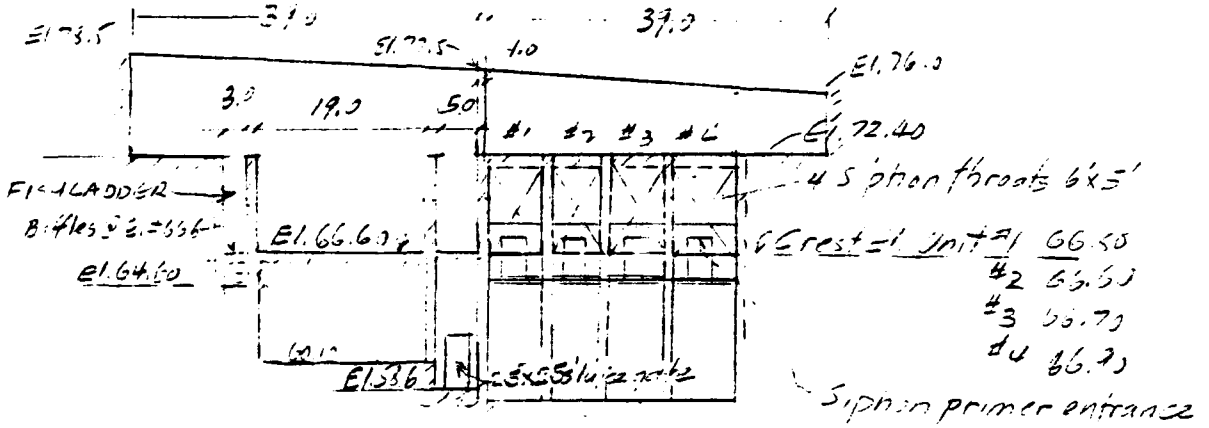
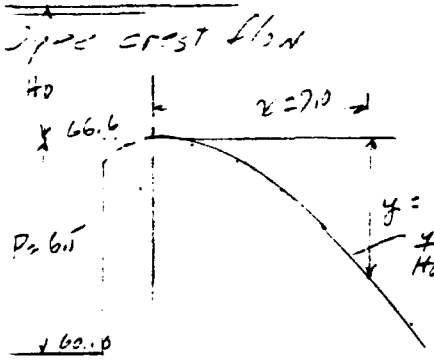
BY_____ DATE_____ **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. 3 OF_____

CHKD. BY_____ DATE_____ INSPECTION OF 24"-MASS PROJECT N-128

SUBJECT WHITMAN POND RESERVOIR DAM - DISCHARGE CURVES





$P = 6.5$ Say $H_o = 4$ Say $C = 4$ $q = 3.4^{3/2} = 4(2)^{3/2} = 22$

$d_a = P + H_o = 10.5$ $V_a = \frac{22}{10.5} = 3.35$ $h_v = .0164$

$\frac{h_v}{H_o} = \frac{.0164}{4.0} = .0036$

Small dams Fig 247 $k = .51$ $n = 1.85$

$y = k\left(\frac{x}{H_o}\right)^n$

For $x = 7.0$ $y = 5.73$

$H_o = \frac{5.73}{.51(7)^{1.85}} = \frac{5.73}{3.176}$ $H_o = 4.0$

OVERFLOW CREST + FISH LADDER Q_1 C_c –

Elev.	He	$\frac{He}{H_o}$	$\frac{e}{C_o}$*	**C	$\frac{q}{H^{3/2}}$	L = 27' ΔQ	Over Dam Q_2 @El. 72.4 L = 51. H	L	ΔQ	Q_1+Q_2
66.6	0	–	–		0					0
67.6	1.0	0.25	0.86	3.27	3.27	98				88
68.6	2.0	0.50	0.92	3.50	9.90	268				268
69.6	3.0	0.75	0.96	3.65	18.77	512				512
70.6	4.0	1.00	1.00	3.80	30.46	821				821
71.6	5.0	1.25	1.03	3.90	43.65	1177				1177
72.4	5.8	1.45	1.05	4.00	55.87	1509	0		0	1509
73.0	6.4	1.60	1.07	4.07	65.90	1780	0.6	2.5	59	1839
74.3	7.4	1.85	1.08	4.10	82.53	2229	1.6	2.8	287	2518
76.0	9.4	2.35	1.09	4.14	119.31	3221	3.6	2.8	975	4196
77.5	10.9	2.73	1.09	4.15	149.34	4032	5.1	2.9	1645	5677
78.5	11.6	2.9	1.09	4.15	163.96	4426	6.1	2.6	1098	5524

* Fig 250 Small Dams

** $\frac{P}{H_o} = \frac{6.5}{4} = 1.625$ $C_o = 0.97 \times 3.92 = 3.8$

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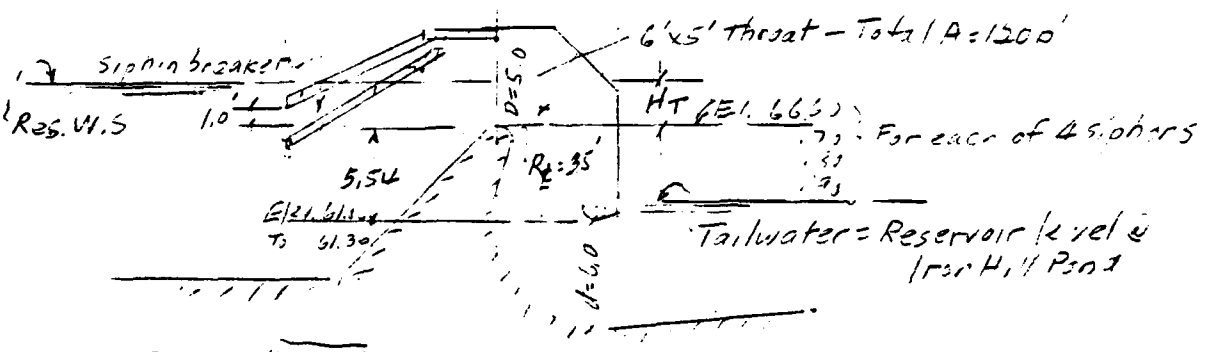
BY_____DATE_____ **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. 4 OF_____

CHKD. BY_____DATE_____ INSPECTION OF DAMS - MASS. PROJECT_____

SUBJECT WHITMAN POND RESERVOIR DAM - DISCHARGE CURVES

SIPHON - WHITMAN POND DAM



$Q = CA\sqrt{2gH_T}$

$\frac{d}{D} = \frac{6}{5} = 1.20$ $\frac{R_c}{D} = \frac{3.5}{5} = 0.7$ $C = 0.65$ (Fig 297 Small Dams)

$Q = 654.4\sqrt{H_T}$

Reserv. Elev	Overflow Q_1+Q_2	Tr'al Tailwater El'n	H_T (Average)	Siphon Discharge Q_3	$Q_1+Q_2+Q_3$	Actual T.W. Elev	Remarks
65.6	0			0	0		
67.6	83	-	6.54	418	506	59.7	< Top - Outlet OK
67.7	100	-	6.54 6.64	828	928	60.1	< " " " "
67.8	113	-	6.54 6.54 6.54 6.54	1265	1378	60.1	< " " " "
67.9	128	-	6.54 6.54	1693	1821	60.2	< " " " "
68.6	265		7.54	1797	2065	60.2	< " " " "
69.6	512	61.6	5.0	1851	2363	62.5	Too low
		62.0	7.1	1804	2316	62.1	OK
72.6	821	64.0	6.6	1681	2502	64.0	OK
71.6	1177	65.5	6.1	1616	2793	65.6	OK
72.4	1509	66.0	6.4	1656	3164	66.2	Too low
		66.1	6.3	1643	3152	66.1	OK (Top of dam)
73.0	1839	66.5	6.5	1668	3507	66.5	OK
74.0	2518	67.3	6.7	1694	4212	67.0	Too high
		67.1	6.9	1719	4237	67.1	OK
76.0	4196	68.3	7.7	1816	6011	68.3	OK
77.5	5677	69.0	8.5	1908	7585	69.1	OK

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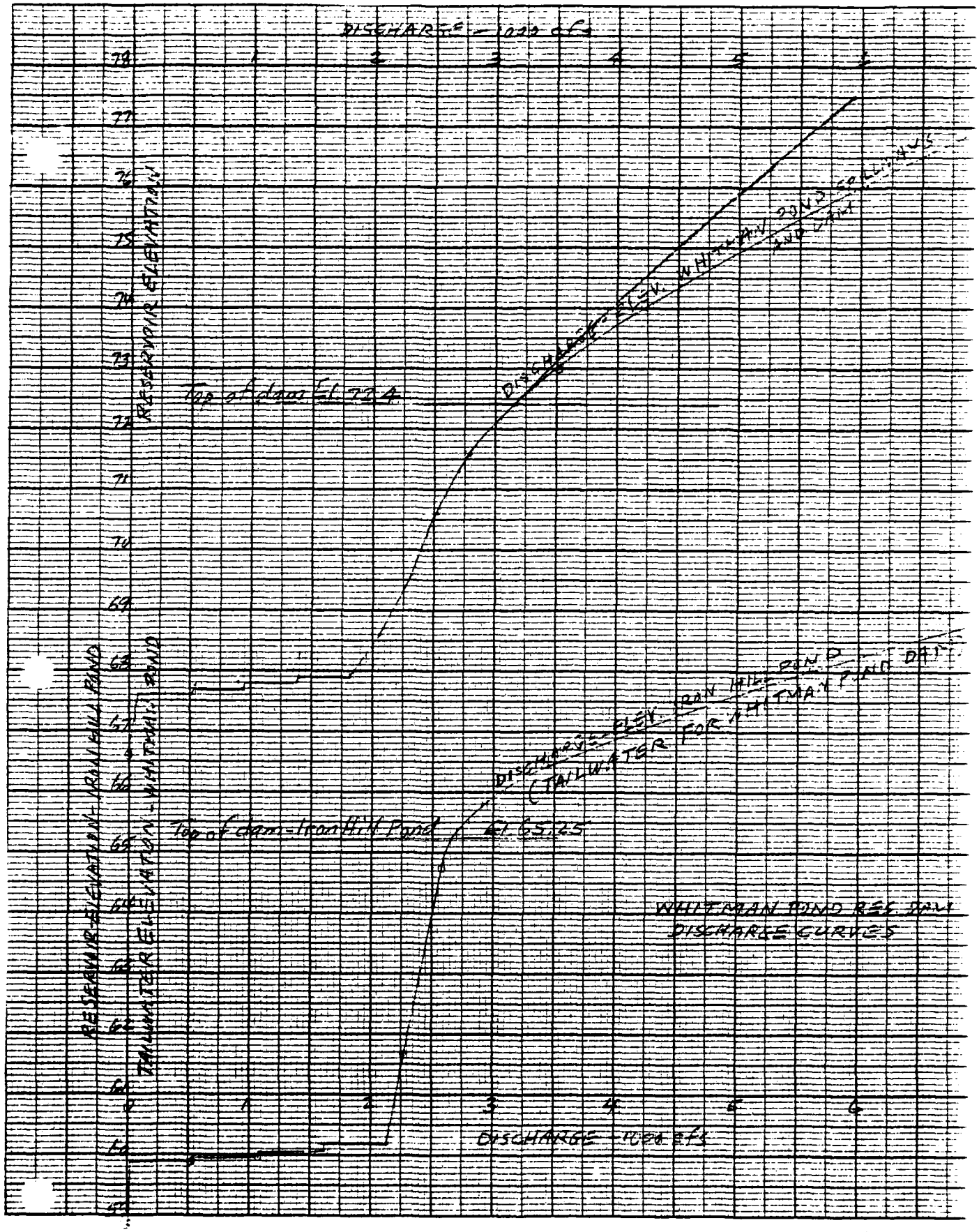

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BY RFE DATE 4-1-80 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. 1 OF

CHKD. BY DATE INSPECTION OF DAMS PROJECT W-148

SUBJECT WHITMANS POND, HYDROLOGY

DRAINAGE AREA (TOTAL) = 12.11 SQ MI
BY INSPECTION REGIONAL < 25% L

LENGTH OF LONGEST WATER COURSE, L = [illegible] FT
L = [illegible] MI

ELEV DIFFERENCE = 170 - 66 = 104 FT

$\therefore$ SLOPE = $\frac{104}{6.63}$ = 15.69 FT/MI $\frac{1}{\sqrt{S}}$ = 3.96

NOW $\frac{LL_c}{\sqrt{S}} = \frac{6.63 \times 6.63}{2 \times 3.96} = 5.55$

$\left(\frac{LL_c}{\sqrt{S}}\right)^{.33} = (5.55)^{.33} = 1.76$

LAG = $K\left(\frac{LL_c}{\sqrt{S}}\right)^{.33} = 1.76K$

ASSUME K = 7.5 HRS — REFER TO "CURVE 3" MOUNTAIN REGION, WELL FORESTED TERRAIN & B OR C SOIL

LAG = 7.5 (1.76) = 13.2 HRS

T_p = 0.41 D + 0.82 LAG, WHERE D = 1.0 HR

T_p = 0.41(1) + 0.82(13.2)

T_p = 0.41 + 10.82 = 11.23

CHECK VELOCITY $T_c = \frac{T_p - .3D}{2.6}$

$T_c = \frac{11.23 + .5}{2.6} = 4.51$ HRS

$V = \frac{35,000}{19.5(3600)} = 0.5$ FT/SEC O.K.

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BY RFB DATE 4-[illegible]-80 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. 2 OF

CHKD. BY DATE INSPECTION OF DAMS PROJECT [illegible]

SUBJECT WHITMANS POND [illegible]

$T_R = 1.67\ T_p = 1.67(11.23) = 18.75$ HRS

$T_B = T_p + T_B = 11.23 + 3.75 = 29.48$ HRS

q_p = PEAK RATE IN CFS

$$q_p = \frac{484\ A\ Q}{T_p}$$

A = DRAINAGE AREA = 12.11 - 2.89

Q = RUNOFF IN INCHES

$$q_p = \frac{484\ (9.22)(1)}{11.23} = 397 \text{ CFS}$$

PMP = PROBABLE MAXIMUM PRECIPITATION = 23.5 (.8) = 18.8"

FOR WEYMOUTH, MASS.

= 18.4 CONSIDERING INFILTRATION FOR OVERLAND FLOW

FLOOD HYDROGRAPH FOR PMF q_p = 397 CFS

TIME (HOURS)	RAINFALL		Q	TIME		
	%	INCHES	CFS	BEGIN	PEAK	END
0.0	-					
1.0	10	1.84	730	0	11.2	20
2.0	12	2.21	877	1.0	12.2	21
3.0	15	2.76	1096	2.0	13.2	22
4.0	38	6.99	2775	3.0	14.2	23
5.0	14	2.58	1024	4.0	15.2	24
6.0	11	2.02	802	5.0	16.2	25

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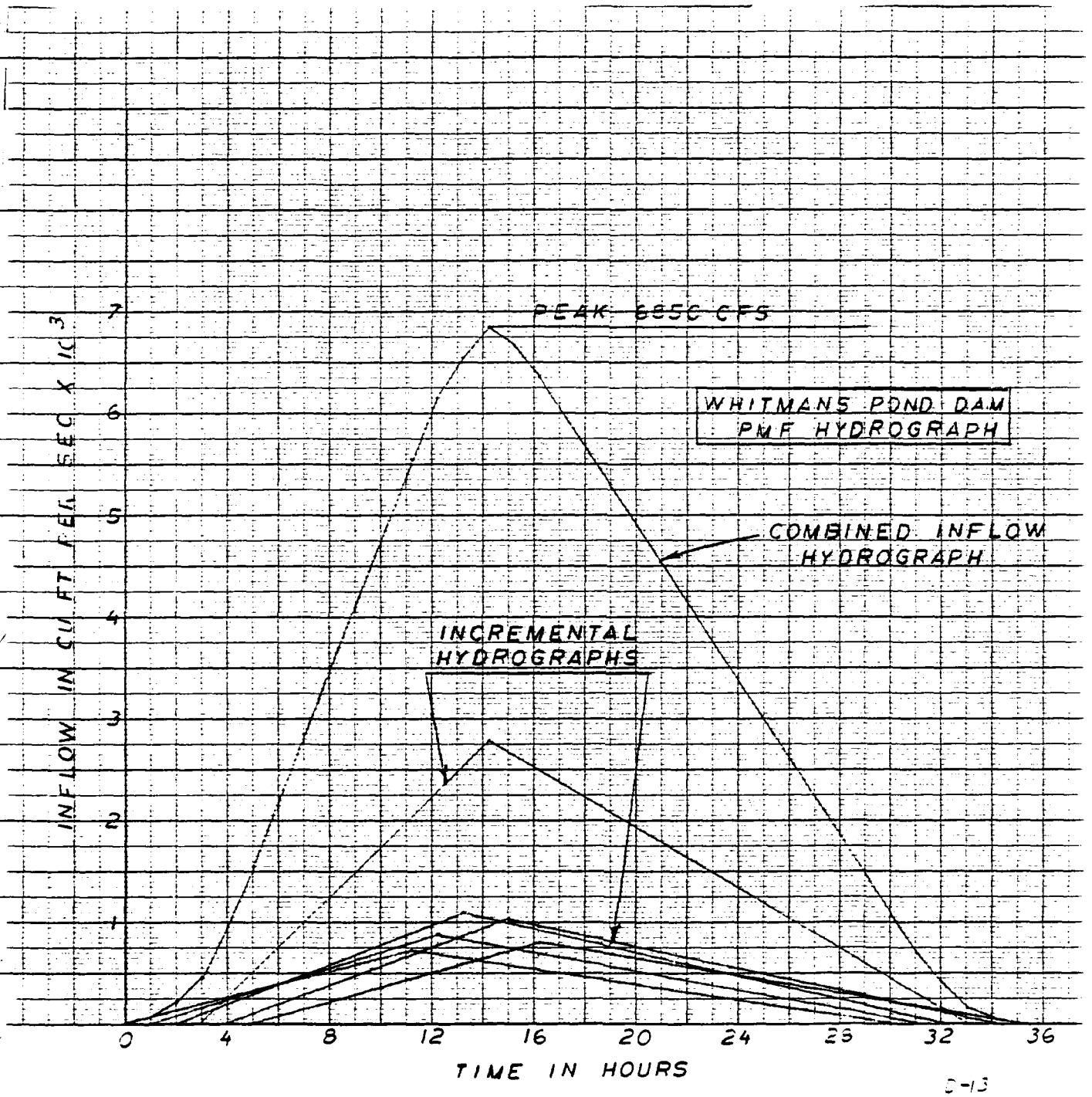
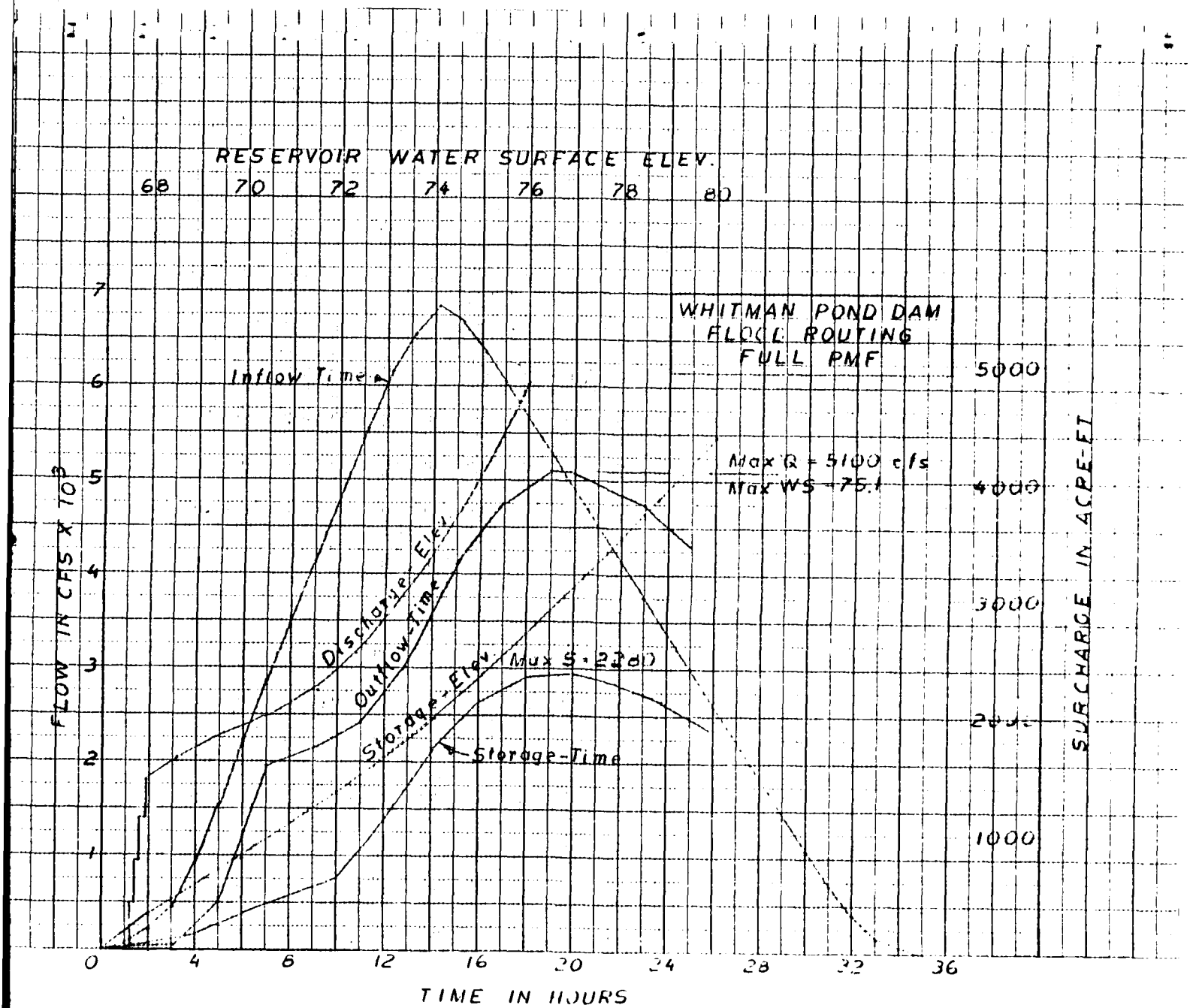
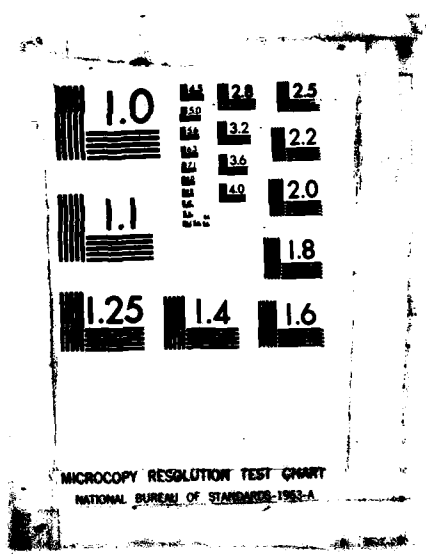

PEAK 6650 CFS
WHITMANS POND DAM
PMF HYDROGRAPH
COMBINED INFLOW
HYDROGRAPH
INCREMENTAL
HYDROGRAPHS
INFLOW IN CU FT PER SEC X 10^3
1
2
3
4
5
6
7
0
4
8
12
16
20
24
28
32
36
TIME IN HOURS

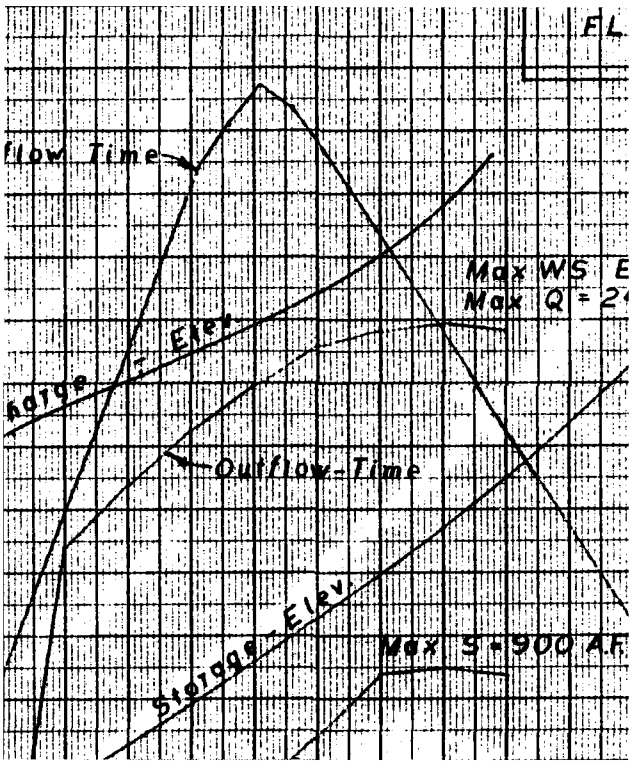

RESERVOIR WATER SURFACE ELEV.
68
70
72
74
76
78
80
WHITMAN POND DAM
FLOOD ROUTING
FULL PMF
Max Q = 5100 cfs
Max WS = 75.1
Inflow Time
Discharge-Elev.
Outflow-Time
Storage-Elev. Max S = 2280
Storage-Time
FLOW IN CFS X 10³
SURCHARGE IN ACRE-FT
5000
4000
3000
2000
1000
0
4
8
12
16
20
24
28
32
36
TIME IN HOURS

AD-A155 695 NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS WHITMANS POND DAM (MA..(U) CORPS OF ENGINEERS WALTHAM MA NEW ENGLAND DIV AUG 80 2/2

UNCLASSIFIED F/G 13/13 NL

UNCLAS


1.0
1.1
1.25
1.4
1.6
2.8
3.2
3.6
4.0
2.5
2.2
2.0
1.8
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A


FL
flow Time
Max WS E
Max Q = 2
Storage - Elev.
Outflow-Time
Storage-Elev.
Max S = 900 A.F.

BY RFB DATE 7-[illegible] **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. 1 OF 4

CHKD. BY DATE INSPECT VILLAGE DAMS PROJECT WAYNE

SUBJECT WHITMAN POND DAM, FAILURE ANALYSIS

STEP 1: RESERVOIR ELEV. @ FAILURE = 72.4'
MAXIMUM TOP OF DAM
STORAGE = 2000 ACRE-FEET

STEP 2: ASSUME 25 FT WIDTH OF ABUTMENT NOTCH

WATER ELEVATION @ WHITMAN DAM = 72.4, Q = 3,150
IRON HILL DAM = 66.1, Q = 3,150
Δh = 8.3 FT

USE ORIFICE FLOW FOR BREACH

$Q = CAV = CA\sqrt{2gh}$

$A = 8.3 \times 25 = 208$ SQ FT

$Q = 0.7(208)(2 \times 32.2 \times 8.3)^{1/2} = 3370$ CFS

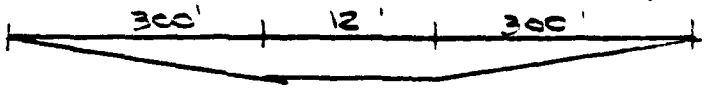
$Q_{TOTAL} = 3150 + 3370 = 6520$

SAY $Q_{p,TOTAL} = 6500$ CFS

SAY $Q_{SPILLWAY} = 3,200$ CFS

SAY VALLEY STORAGE BETWEEN DAM & N.Y.N.H.&H.R.R.

EQUALS $\frac{1}{43,560}\left(\frac{12+612}{2}\right)(2200') + \frac{1000 \times 1000 \times 9}{43,560} = 222$ A.F.
(ΔV BETWEEN DAM & BROAD ST) + (ΔV BROAD ST TO RR) = $\Sigma \Delta V$



Q @ RR = $6500\left(1 - \frac{222}{2000}\right) = 5790$ CFS

NOTE ΔV = DIFFERENCE IN VOLUME BETWEEN AFTER FAILURE & BREACH FAILURE CONDITIONS

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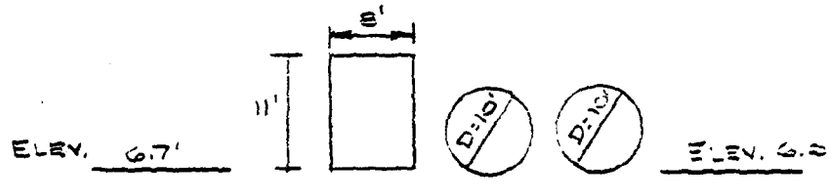
BY RFB DATE 7-21-30 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. 2 OF 4

CHKD. BY ____ DATE ____ INSPECTION OF DAMS PROJECT W-195

SUBJECT WHITMAN POND DAM, EAST BRIDGEWATER, MASS.

Q @ NORMAL = SR = 5,760 cfs

ELEV. 42'



ELEV.	Box				Pipes			Q
	HW	HW/D	Q/B	Q	HW	HW/D	Q	TOTAL
26	19.3	1.75	175	1400	20	2.0	3200	4600
28	21.3	1.94	195	1560	22	2.20	3500	5060
30	23.3	2.12	210	1680	24	2.4	3800	5480
32	25.3	2.30	232	1776	26	2.6	4000	5776
34	27.3	2.48	238	1904	28	2.8	4200	6104
36	29.3	2.66	250	2000	30	3.0	4400	6400

FLOOD WATERS WILL POOL TO ELEVATION 32 ±
BACKWATER TO APPROXIMATELY OLD NORTH MORSE BUILDING

CHECK FLOODING, IF ANY FROM SPILLWAY Q
WHAT IS Q CAPACITY @ TOP OF CHANNEL

17.5 15.8 1.16 115 920 14 1.4 2400 3320

WATER CONTAINED IN CHANNEL FOR [illegible] Q.

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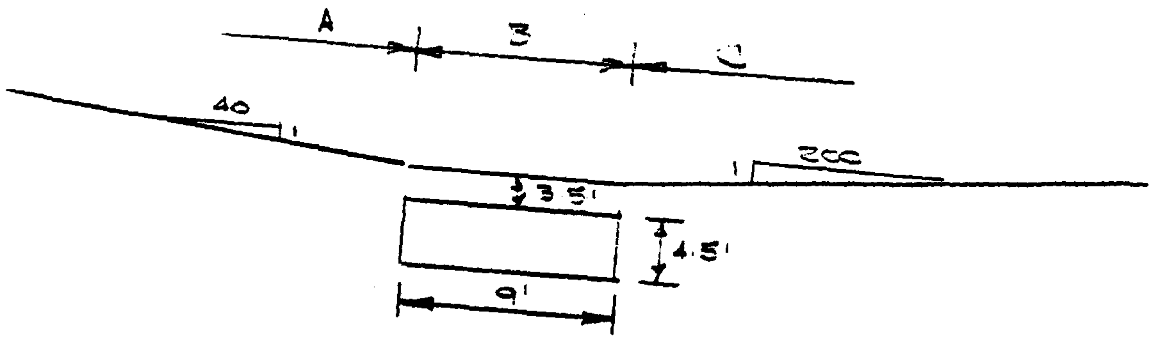
BY RFB DATE 7-21-80 **LOUIS BERGER & ASSOCIATES INC.**
CHKD. BY ______ DATE ______
SUBJECT W[illegible] [illegible] DAM + [illegible] ANALYSIS — INSPECTION OF DAMS
SHEET NO. 3 OF 4
PROJECT N-[illegible]

FROM BROAD ST BACK ASSUME [illegible] [illegible] [illegible] 2,500 CFS FOR M&E REPORT

CAPACITY OF [illegible] BROOK [illegible] [illegible] DAM TO BROAD ST. IS ABOUT 400 CFS [illegible] M&E REPORT.

FLOW DUE TO BREACH IN OLD [illegible] [illegible] CHANNEL = 6,500 - 2,500 = 4,000 CFS



PLEASANT ST. CROSSING

ASSUME ΔH ACROSS STREET = 2 FT AND WEIR FLOW OVER ROAD

STAGE	Q BOX	A, C=2.3 ΔH	L	Q	B, C=2.3 ΔH	L	Q
8	350	0			0	9	
10		1	80	184	2		60
12		2	160	1040	4		166
14		3	240	2870	6		304
11	350	1.5	120	510	3		107

STAGE	C, C=2.0 ΔH	L	Q	Q TOTAL
8	0	0		350
10	1	400	800	1050
12	2	800	4575	5731
14	3	1200	12570	—
11	1.5	600	2300	2800

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BY RFB DATE 7-21-80 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. 4 OF 4

CHKD. BY _____ DATE _____ PROJECT _____

SUBJECT _____

DEPTH OF FLOODING @ PLEASANT ST
ESTIMATED TO BE BETWEEN 3 & 4 FT

ESTIMATE OF FLOODING

BELOW BROAD ST.

PINGREE SCHOOL	= 7 FT
4 INDUSTRIAL BLDG	= 3 TO 4 FT
7 COMMERCIAL	= 3 TO 4 FT
1 HOUSE	= 3 TO 4 FT

COMMERCIAL ST AREA

8 COMMERCIAL BLDGS	1 TO 5 FT
3 HOUSES	1 TO 5 FT

PLEASANT ST. AREA

8 COMMERCIAL	1 TO 4 FT
3 HOUSES	1 TO 4 FT

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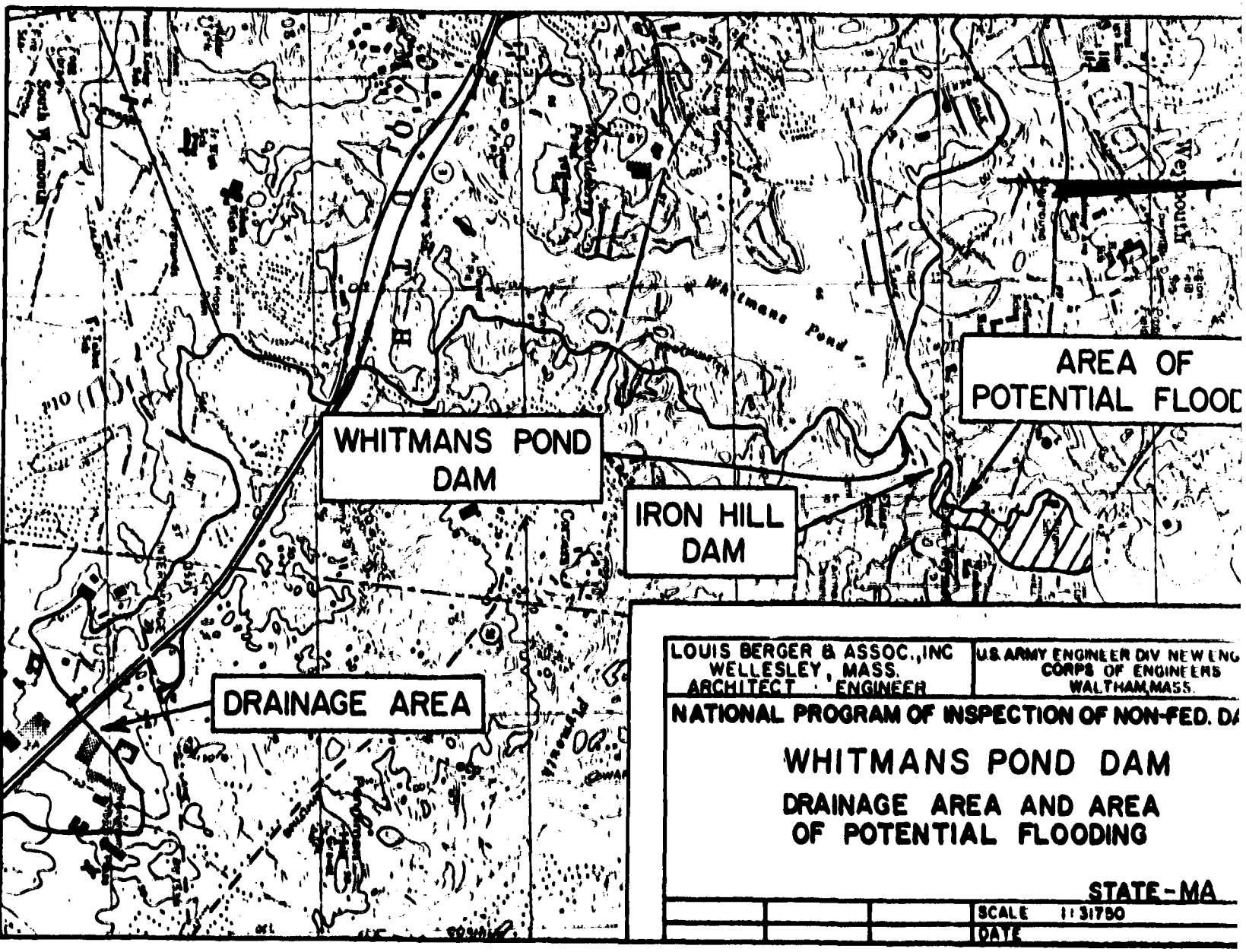


LOUIS BERGER & ASSOC., INC
WELLESLEY, MASS.
ARCHITECT ENGINEER

U.S. ARMY ENGINEER DIV NEW ENG
CORPS OF ENGINEERS
WALTHAM, MASS.

NATIONAL PROGRAM OF INSPECTION OF NON-FED. DA

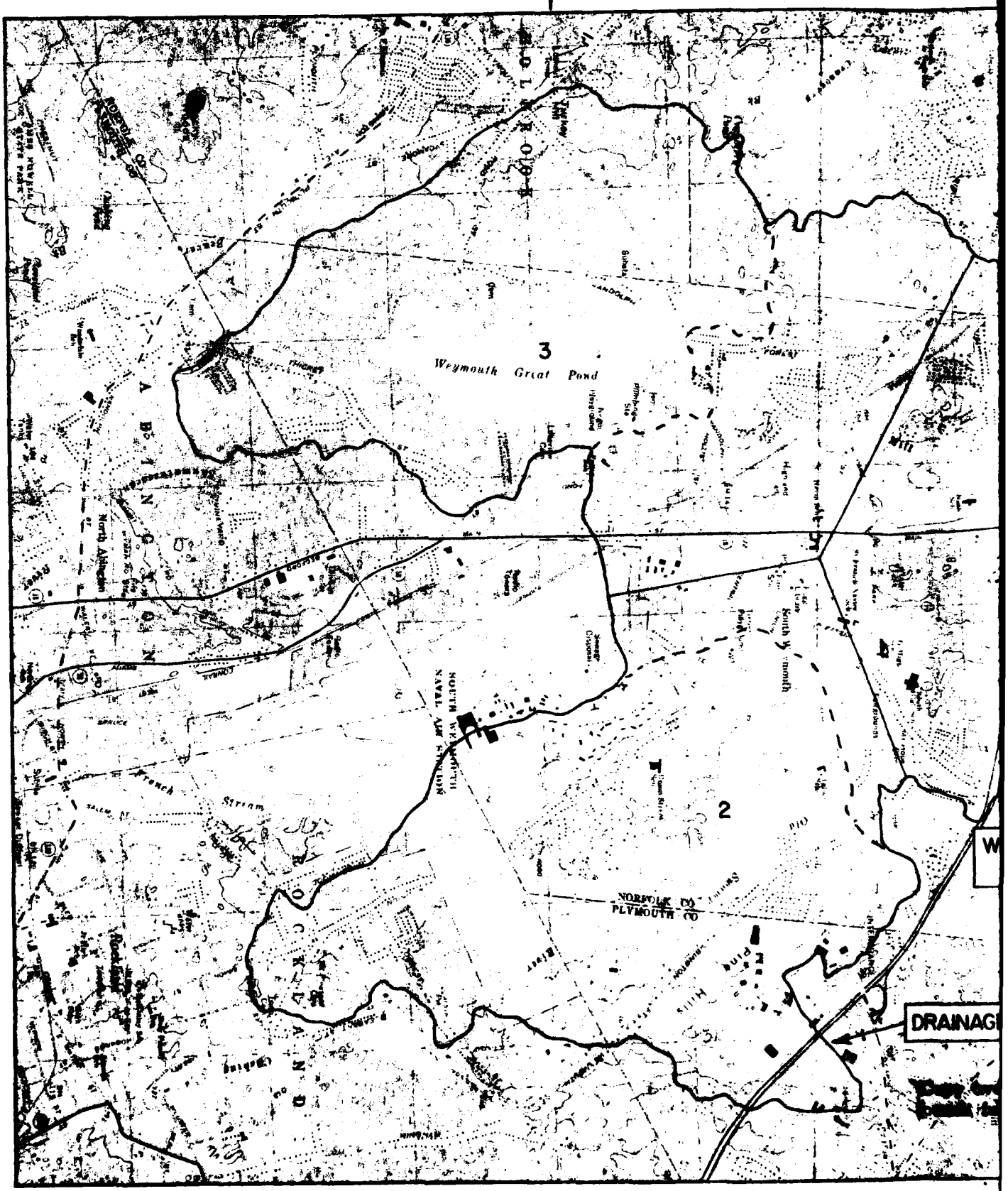
WHITMANS POND DAM

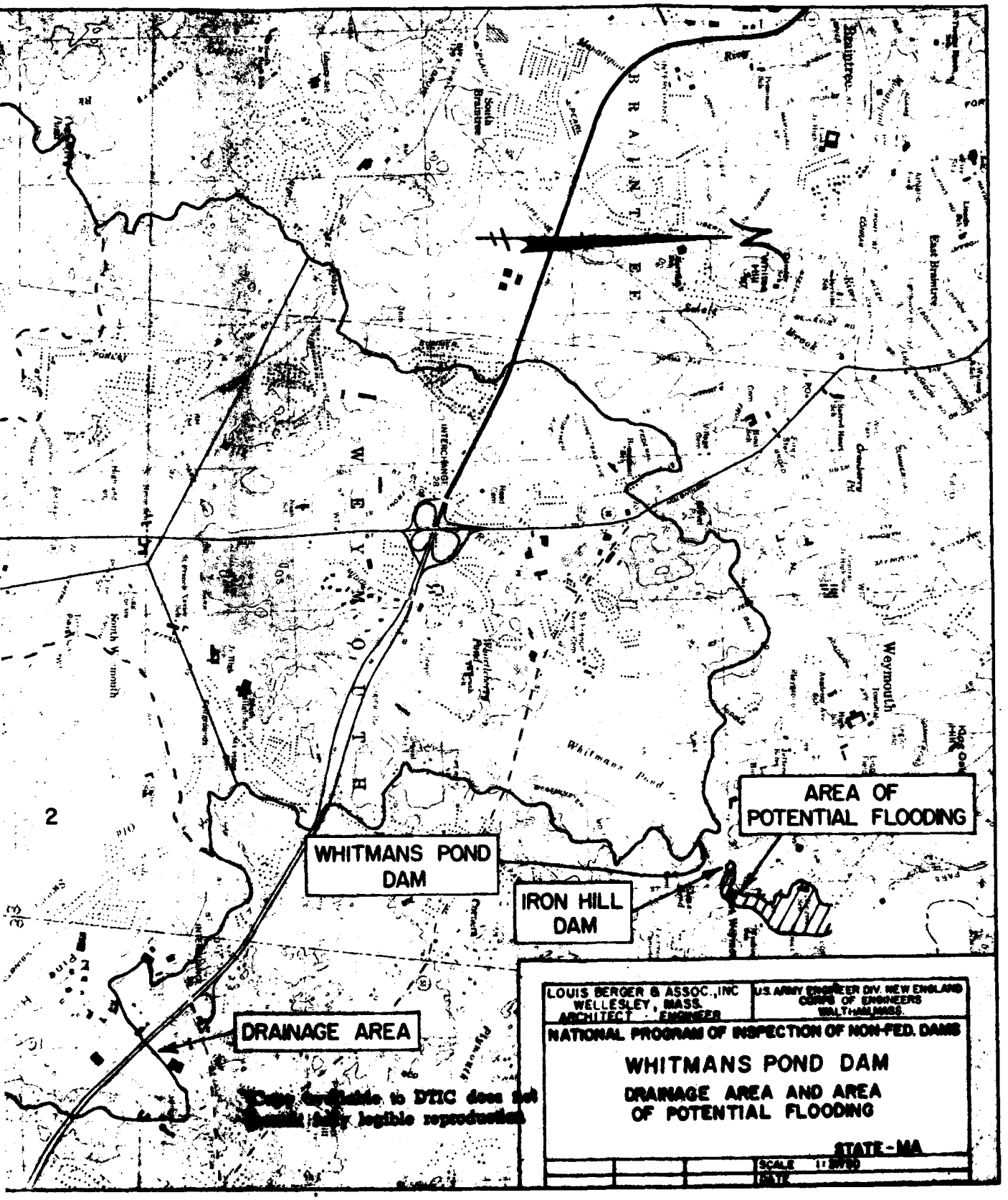
DRAINAGE AREA AND AREA OF POTENTIAL FLOODING

STATE - MA

SCALE 1:31680

DATE


3
Weymouth Great Pond
2
North Abington
South Weymouth
NAVAL AIR STATION
NORFOLK CO
PLYMOUTH CO
DRAINAGE



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APPENDIX E

INFORMATION AS CONTAINED IN THE NATIONAL INVENTORY OF DAMS

INVENTORY OF DAMS IN THE UNITED STATES

(1) ENTITY NUMBER	(2) DIVISION	(3) STATE	(4) COUNTY	(5) CONGR DIST.	(6) STATE	(7) COUNTY	(8) CONGR DIST.	(9) NAME	(10) LATITUDE (NORTH)	(11) LONGITUDE (WEST)	(12) REPORT DATE DAY | MO | YR
775	NED	MA	021	12				WHITMANS POND DAM	4212.8	7055.7	23FE879

(13) POPULAR NAME	(14) NAME OF IMPOUNDMENT
WHITMANS POND	WHITMANS POND

(15) REGION	(16) BASIN	(17) RIVER OR STREAM	(18) NEAREST DOWNSTREAM CITY–TOWN–VILLAGE	(19) DIST FROM DAM (MI.)	(20) POPULATION
01	06	TR- WEYMOUTH BACK RIVER	WEYMOUTH	0	55000

(21) TYPE OF DAM	(22) YEAR COMPLETED	(23) PURPOSES	(24) STRUCTURAL HEIGHT (FT.)	(25) HYDRAULIC HEIGHT (FT.)	(26) IMPOUNDING CAPACITIES MAXIMUM (ACRE–FT.)	(27) IMPOUNDING CAPACITIES NORMAL (ACRE–FT.)
PG	1900	S	19	16	1400	500

DIST OWN	FED R	PRV/FED	SCS A	VER/DATE
NED	N	N	N	N

(28) REMARKS
22-24-25-26-27 ESTIMATED

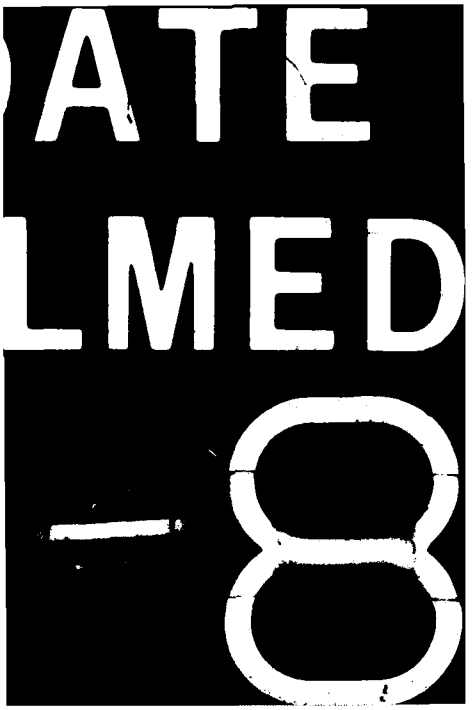
(29) DIS HAS	(30) SPILLWAY CREST LENGTH	(31) SPILLWAY TYPE	(32) SPILLWAY WIDTH (FT.)	(33) MAXIMUM DISCHARGE (FT.)	(34) VOLUME OF DAM (CY)	(35) POWER CAPACITY INSTALLED (MW)	(36) POWER CAPACITY PROPOSED (MW)	(37) NAVIGATION LOCKS NO.	(38) LENGTH (FT.)	(39) WIDTH (FT.)	(40) LENGTH (FT.)	(41) WIDTH (FT.)	(42) LENGTH (FT.)	(43) WIDTH (FT.)	(44) LENGTH (FT.)	(45) WIDTH (FT.)
1	120	C	12		5000											

(46) OWNER	(47) ENGINEERING BY	(48) CONSTRUCTION BY
TOWN OF WEYMOUTH		

(49) REGULATORY AGENCY			
DESIGN	CONSTRUCTION	OPERATION	MAINTENANCE

(50) INSPECTION BY	(51) INSPECTION DATE DAY | MO | YR	(52) AUTHORITY FOR INSPECTION

(53) REMARKS
46-ESTIMATED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